Tropical Savannas CRC | Northern Territory Government | Natural Resource Management Board (NT) Inc.

Management Guidelines for the Threatened Species of the Northern Territory

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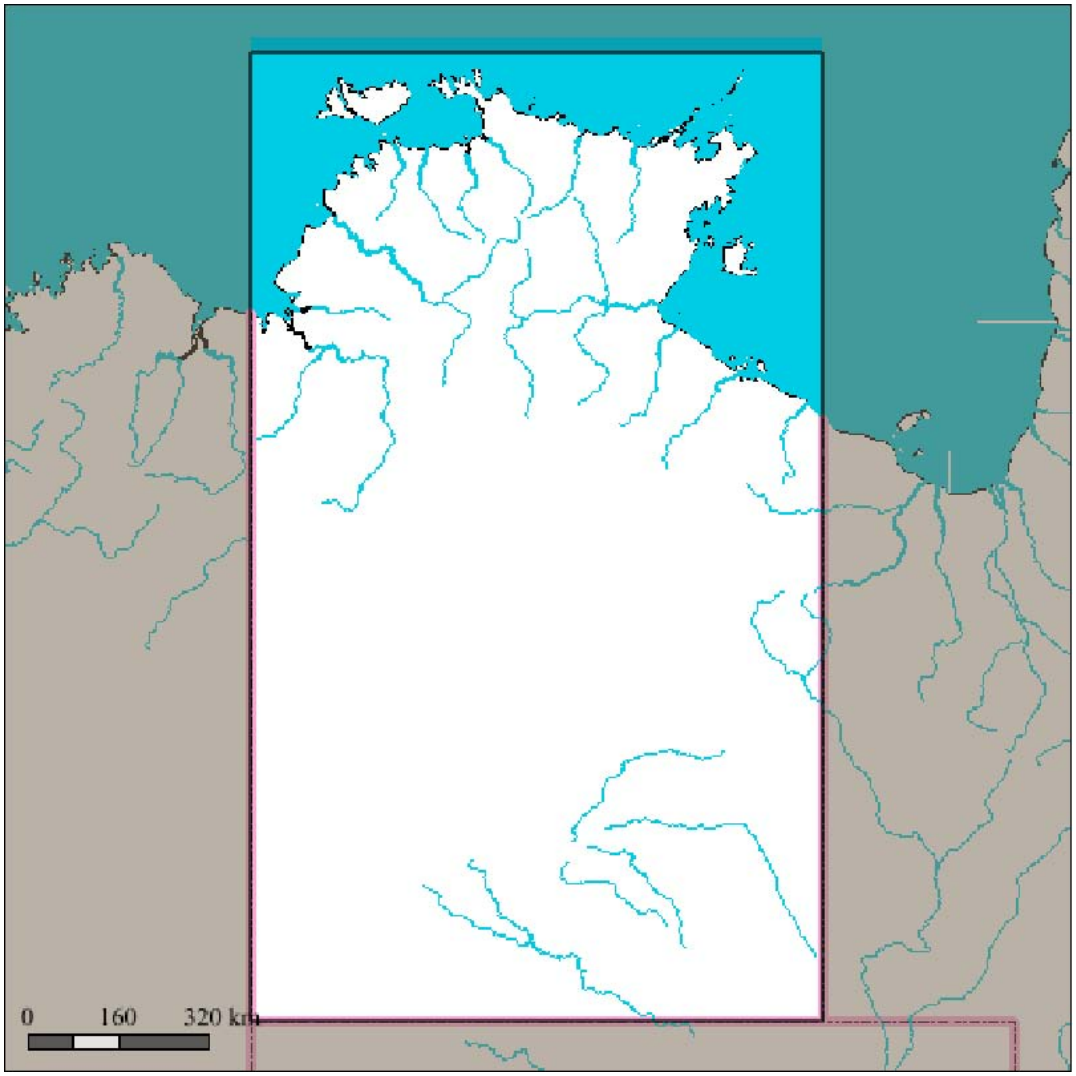
Northern Territory

The tables below list species that occur in the Northern Territory, or have become extinct from the Northern Territory in the last 200 year.



Species List

Threatened species of the Northern Territory with management guidelines included in this booklet

Group	English Name	Scientific Name	NT Status	National Status	Info*
Ferns	King Fern	*Angiopteris evecta*	VU	-	Info
Ferns	Filmy Fern	*Cephalomanes obscurum*	EN	-	Info
Ferns	Venus-hair Fern	*Adiantum capillus-veneris*	VU	-	Info
Ferns	Victoria River Coral Fern	*Gleichenia* sp. Victoria River (I.D.Cowie 9193)	VU	-	Info
Ferns	Shiny Fan Fern	*Sticherus flabellatus var. compactus*	VU	-	Info
Cycads	Armstrong's Cycad	*Cycas armstrongii*	VU	-	Info
Cycads	MacDonnell Ranges Cycad	*Macrozamia macdonnellii*	-	VU	Info
Flowering Plants	Mitrella	*Mitrella tiwiensis*	VU	VU	Info
Flowering Plants	Xylopia	*Xylopia monosperma*	EN	EN	Info
Flowering Plants	Northern Laurel	*Cryptocarya hypospodia*	EN	-	Info
Flowering Plants	Native Walnut	*Endiandra limnophila*	VU	-	Info
Flowering Plants	Lantern Tree	*Hernandia nymphaeifolia*	VU	-	Info
Flowering Plants	Warren's Mangosteen	*Garcinia warrenii*	EN	-	Info
Flowering Plants	Quandong	*Elaeocarpus miegei*	CR	-	Info
Flowering Plants	Yellow Star	*Schoutenia ovata*	VU	-	Info
Flowering Plants	Helictres	*Helicteres* sp. Glenluckie Creek (N.B.Byrnes 1280)	EN	EN	Info
Flowering Plants	Brennan's Native Hibiscus	*Hibiscus brennanii*	VU	VU	Info
Flowering Plants	Craven's Native Hibiscus	*Hibiscus cravenii*	VU	VU	Info
Flowering Plants	Tobermorey Melon	*Mukia* sp. Tobermorey Station (D.E.Albrecht 6322)	VU	-	Info
Flowering Plants	Tjilpi Wattle	*Acacia latzii*	VU	VU	Info

Group	English Name	Scientific Name	NT Status	National Status	Info*
Flowering Plants	Waddy Wood	*Acacia peuce*	EN	VU	Info
Flowering Plants	Birds Nest Wattle	*Acacia pickardii*	VU	VU	Info
Flowering Plants	Wattle	*Acacia praetermissa*	VU	VU	Info
Flowering Plants	Graveside Gorge Wattle	*Acacia* sp. Graveside Gorge (V.J.Levitzke 806)	CR	CR	Info
Flowering Plants	Undoolya Wattle	*Acacia undoolyana*	VU	VU	Info
Flowering Plants	Pink Myrtle	*Lithomyrtus linariifolia*	VU	-	Info
Flowering Plants	Palm Valley Myrtle	*Thryptomene hexandra*	VU	-	Info
Flowering Plants	Pternandra	*Pternandra coerulescens*	VU	-	Info
Flowering Plants	Dendromyza	*Dendromyza reinwardtiana*	VU	-	Info
Flowering Plants	Sweet Quandong	*Santalum acuminatum*	VU	-	Info
Flowering Plants	Glory of the Centre	*Ricinocarpos gloria-medii*	VU	VU	Info
Flowering Plants	Sauropus	*Sauropus filicinus*	-	VU	Info
Flowering Plants	Steelwood	*Toechima* sp. East Alligator (J.Russell-Smith 8418)	EN	EN	Info
Flowering Plants	Boronia	*Boronia quadrilata*	VU	VU	Info
Flowering Plants	Boronia	*Boronia viridiflora*	VU	VU	Info
Flowering Plants	Desert Flannel Flower	*Actinotus schwarzii*	VU	VU	Info
Flowering Plants	Playtsace	*Platysace saxatilis*	VU	-	Info
Flowering Plants	Waxflower	*Hoya australis* subsp. *oramicola*	VU	VU	Info
Flowering Plants	Thorny Solanum	*Solanum carduiforme*	-	VU	Info
Flowering Plants	Giant Sweet Potato	*Ipomoea polpha* subsp. *latzii*	VU	VU	Info
Flowering Plants	Wrixonia Mintbush	*Wrixonia schultzii*	VU	VU	Info
Flowering Plants	Valley Emubush	*Eremophila* sp. Rainbow Valley (T.S.Henshall 1181)	VU	VU	Info
Flowering Plants	Bladderwort	*Utricularia dunstaniae*	VU	-	Info
Flowering Plants	Bladderwort	*Utricularia singeriana*	VU	-	Info

Group	English Name	Scientific Name	NT Status	National Status	Info*
Flowering Plants	Goodenia	*Goodenia quadrifida*	-	VU	Info
Flowering Plants	Tarennoidea	*Tarennoidea wallichii*	EN	-	Info
Flowering Plants	Minnie Daisy	*Minuria tridens*	VU	VU	Info
Flowering Plants	Daisy-Bush	*Olearia macdonnellensis*	VU	VU	Info
Flowering Plants	Australian Sugar Palm	*Arenga australasica*	-	VU	Info
Flowering Plants	Central Australian Cabbage Palm	*Livistona mariae* subsp. *mariae*	VU	VU	Info
Flowering Plants	Darwin Palm	*Ptychosperma macarthurii*	EN	EN	Info
Flowering Plants	Narrow Leaf Climbing Pandan	*Freycinetia excelsa*	VU	-	Info
Flowering Plants	Climbing Pandan	*Freycinetia percostata*	VU	-	Info
Flowering Plants	Typhonium	*Typhonium jonesii*	EN	EN	Info
Flowering Plants	Typhonium	*Typhonium mirabile*	EN	EN	Info
Flowering Plants	Typhonium	*Typhonium taylori*	EN	EN	Info
Flowering Plants	Swamp Twig-Rush	*Baumea arthrophylla*	EN	-	Info
Flowering Plants	Caldwell's Clubrush	*Bolboschoenus caldwellii*	EN	-	Info
Flowering Plants	Dwarf Desert Spike-Rush	*Eleocharis papillosa*	VU	VU	Info
Flowering Plants	Coastal Plain Spike-Rush	*Eleocharis retroflexa*	-	VU	Info
Flowering Plants	Mapania	*Mapania macrocephala*	VU	-	Info
Flowering Plants	Haresfoot Grass	*Ectrosia blakei*	.	VU	Info
Flowering Plants	Spinifex	*Triodia fitzgeraldii*	VU	-	Info
Flowering Plants	Arrowleaf Monochoria	*Monochoria hastata*	VU	-	Info
Flowering Plants	Burmannia	*Burmannia* sp. Bathurst Island (R.J.Fensham 1021)	EN	EN	Info
Flowering Plants	Beard Orchid	*Calochilus caeruleus*	VU	-	Info
Flowering Plants	Ground Orchid	*Habenaria rumphii*	EN	-	Info
Flowering Plants	Luisia Orchid	*Luisia teretifolia*	VU	-	Info

Group	English Name	Scientific Name	NT Status	National Status	Info*
Flowering Plants	Ground Orchid	*Malaxis latifolia*	VU	-	Info
Flowering Plants	Ground Orchid	*Malaxis marsupichila*	VU	-	Info
Flowering Plants	Epiphytic Orchid	*Thrixspermum congestum*	VU	-	Info
Flowering Plants	Ground Orchid	*Zeuxine oblonga*	VU	-	Info
Frogs	Howard Springs Toadlet	*Uperoleia daviesae*	VU	-	Info
Reptiles	Loggerhead Turtle	*Caretta caretta*	EN	EN	Info
Reptiles	Green Turtle	*Chelonia mydas*	-	VU	Info
Reptiles	Hawksbill Turtle	*Eretmochelys imbricata*	-	VU	Info
Reptiles	Olive Ridley	*Lepidochelys olivacea*	-	EN	Info
Reptiles	Flatback Turtle	*Natator depressus*	-	VU	Info
Reptiles	Leatherback Turtle	*Dermochelys coriacea*	VU	VU	Info
Reptiles	Gulf Snapping Turtle	*Elseya lavarackorum*	-	EN	Info
Reptiles	Yellow-snouted Gecko	*Lucasium occultum*	VU	EN	Info
Reptiles	Bronzeback Snake-Lizard	*Ophidiocephalus taeniatus*	-	VU	Info
Reptiles	Arafura Snake-eyed Skink	*Cryptoblepharus gurrmul*	EN	.	Info
Reptiles	VRD Blacksoil Ctenotus	*Ctenotus rimacola camptris*	VU	-	Info
Reptiles	Great Desert Skink	*Egernia kintorei*	VU	VU	Info
Reptiles	Arnhemland Egernia	*Egernia obiri*	EN	EN	Info
Reptiles	Slater's Egernia	*Egernia slateri*	EN	EN	Info
Reptiles	Mertens' Water Monitor	*Varanus mertensi*	VU	-	Info
Reptiles	Yellow-spotted Monitor	*Varanus panoptes*	VU	-	Info
Reptiles	Oenpelli Python	*Morelia oenpelliensis*	VU	-	Info
Birds	Emu	*Dromaius novaehollandiae*	VU	-	Info
Birds	Malleefowl	*Leipoa ocellata*	CR	VU	Info

Group	English Name	Scientific Name	NT Status	National Status	Info*
Birds	Partridge Pigeon	*Geophaps smithii*	VU	VU	Info
Birds	Christmas Island Frigatebird	*Fregata andrewsi*	-	VU	Info
Birds	Red Goshawk	*Erythrotriorchis radiatus*	VU	VU	Info
Birds	Australian Bustard	*Ardeotis australis*	VU	-	Info
Birds	Plains-wanderer	*Pedionomus torquatus*	-	VU	Info
Birds	Australian Painted Snipe	*Rostratula australis*	VU	VU	Info
Birds	Princess Parrot	*Polytelis alexandrae*	VU	VU	Info
Birds	Night Parrot	*Pezoporus occidentalis*	CR	EN	Info
Birds	Masked Owl (Tiwi Islands)	*Tyto novaehollandiae melvillensis*	EN	EN	Info
Birds	Masked Owl (northern mainland)	*Tyto novaehollandiae kimberli*	VU	VU	Info
Birds	Purple-crowned Fairy-wren (western)	*Malurus coronatus coronatus*	VU	VU	Info
Birds	White-throated Grasswren	*Amytornis woodwardi*	VU	-	Info
Birds	Carpentarian Grasswren	*Amytornis dorotheae*	EN	-	Info
Birds	Thick-billed Grasswren	*Amytornis textilis*	EN	VU	Info
Birds	Yellow Chat (Alligator River)	*Epthianura crocea tunneyi*	EN	VU	Info
Birds	Crested Shrike-tit	*Falcunculus frontatus whitei*	VU	VU	Info
Birds	Grey Currawong	*Strepera versicolor plumbea*	CR	-	Info
Birds	Hooded Robin (Tiwi)	*Melanodryas cucullata melvillensis*	EN	EN	Info
Birds	Gouldian Finch	*Erythrura gouldiae*	EN	EN	Info
Mammals	Brush-tailed Mulgara	*Dasycercus blythi*	VU	VU	Info
Mammals	Crest-tailed Mulgara	*Dasycercus hillieri*	VU	EN	Info
Mammals	Kowari	*Dasyuroides byrnei*	-	VU	Info
Mammals	Northern Quoll	*Dasyurus hallucatus*	CR	EN	Info
Mammals	Carpentarian Antechinus	*Pseudantechinus mimulus*	EN	VU	Info

Group	English Name	Scientific Name	NT Status	National Status	Info*
Mammals	Northern Brush-tailed Phascogale	*Phascogale pirata*	VU	-	Info
Mammals	Butler's Dunnart	*Sminthopsis butleri*	VU	VU	Info
Mammals	Long-tailed Dunnart	*Sminthopsis longicaudata*	VU	-	Info
Mammals	Sandhill Dunnart	*Sminthopsis psammophila*	-	EN	Info
Mammals	Golden Bandicoot	*Isoodon auratus*	EN	VU	Info
Mammals	Greater Bilby	*Macrotis lagotis*	VU	VU	Info
Mammals	Common Brushtail Possum (southern)	*Trichosurus vulpecula vulpecula*	EN	-	Info
Mammals	Mala	*Lagorchestes hirsutus*	EW	EN	Info
Mammals	Black-footed Rock-wallaby	*Petrogale lateralis*	-	VU	Info
Mammals	Southern Marsupial Mole	*Notoryctes typhlops*	VU	EN	Info
Mammals	Arnhem Leaf-nosed Bat	*Hipposideros inornata*	VU	-	Info
Mammals	Bare-rumped Sheath-tailed Bat	*Saccolaimus saccolaimus*	-	CR	Info
Mammals	Brush-tailed Rabbit-rat	*Conilurus penicillatus*	VU	-	Info
Mammals	Golden-backed Tree-rat	*Mesembriomys macrurus*	CR	VU	Info
Mammals	Northern Hopping-mouse	*Notomys aquilo*	VU	VU	Info
Mammals	Fawn Hopping-mouse	*Notomys cervinus*	EN	VU	Info
Mammals	Dusky Hopping-mouse	*Notomys fuscus*	EN	VU	Info
Mammals	Plains Mouse	*Pseudomys australis*	EN	VU	Info
Mammals	Shark Bay Mouse	*Pseudomys fieldi*	EX	VU	Info
Mammals	Arnhem Rock-rat	*Zyzomys maini*	VU	VU	Info
Mammals	Carpentarian Rock-rat	*Zyzomys palatalis*	CR	EN	Info
Mammals	Central Rock-rat	*Zyzomys pedunculatus*	EN	EN	Info
Mammals	Water Mouse	*Xeromys myoides*	-	VU	Info
Mammals	Canefield Rat	*Rattus sordidus*	VU	-	Info

Group	English Name	Scientific Name	NT Status	National Status	Info*
Mammals	Sei Whale	*Balaenoptera borealis*	-	VU	Info
Mammals	Blue Whale	*Balaenoptera musculus*	-	EN	Info
Mammals	Humpback Whale	*Megaptera novaeangliae*	-	VU	Info

* Click on the "Info" links on the right to go to the management-related information of each species

EX = Extinct
EW = Extinct in the Wild
CR = Critically Endangered
EN/VU = One Endangered subspecies/One Vulnerable subspecies
EN = Endangered
EN/- = One Endangered subspecies
VU = Vulnerable
VU/- = One Vulnerable subspecies

Threatened snails, insects and fish (no management guidelines provided)

Group	English Name	Scientific Name	NT Status	National Status	Info*
Snails	Land Snail	*Pillomena aemula*	VU	.	www.landmanager.org.au/view/index.aspx?id=351945
Snails	Spencer's Land Snail	*Bothriembryon spenceri*	VU	.	www.landmanager.org.au/view/index.aspx?id=351895
Snails	Cognate Land Snail	*Amphidromus cognatus*	VU	.	www.landmanager.org.au/view/index.aspx?id=183168
Snails	Land Snail	*Basedowena squamulosa*	VU	.	www.landmanager.org.au/view/index.aspx?id=351885
Snails	Land Snail	*Dirutrachia sublevata*	VU	.	www.landmanager.org.au/view/index.aspx?id=351905
Snails	Land Snail	*Divellomelon hillieri*	VU	.	www.landmanager.org.au/view/index.aspx?id=351915
Snails	Western MacDonnell's Land Snail	*Granulomelon arcigerens*	VU	.	www.landmanager.org.au/view/index.aspx?id=351925
Snails	Gillen Creek Land Snail	*Granulomelon gilleni*	VU	.	www.landmanager.org.au/view/index.aspx?id=347352
Snails	Land Snail	*Granulomelon grandituberculatum*	VU	.	www.landmanager.org.au/view/index.aspx?id=351935
Snails	Desmond's Land Snail	*Mesodontrachia desmonda*	EN	.	www.landmanager.org.au/view/index.aspx?id=183124
Snails	Fitzroy Land Snail	*Mesodontrachia fitzroyana*	CR	EN	www.landmanager.org.au/view/index.aspx?id=183131
Snails	Land Snail	*Ordtrachia australis*	EN	.	www.landmanager.org.au/view/index.aspx?id=183146

Group	English Name	Scientific Name	NT Status	National Status	Info*
Snails	Land Snail	*Ordtrachia septentrionalis*	EN	.	www.landmanager.org.au/view/index.aspx?id=183153
Snails	Land Snail	*Prototrachia sedula*	VU	.	www.landmanager.org.au/view/index.aspx?id=183138
Snails	Land Snail	*Semotrachia caupona*	VU	.	www.landmanager.org.au/view/index.aspx?id=351955
Snails	Ellery Gorge Land Snail	*Semotrachia elleryi*	VU	.	www.landmanager.org.au/view/index.aspx?id=351965
Snails	Emiles Land Snail	*Semotrachia emilia*	VU	.	www.landmanager.org.au/view/index.aspx?id=351975
Snails	Land Snail	*Semotrachia esau*	VU	.	www.landmanager.org.au/view/index.aspx?id=351985
Snails	Land Snail	*Semotrachia euzyga*	EN	EN	www.landmanager.org.au/view/index.aspx?id=351995
Snails	Land Snail	*Semotrachia filixiana*	VU	.	www.landmanager.org.au/view/index.aspx?id=352005
Snails	Land Snail	*Semotrachia huckitta*	VU	.	www.landmanager.org.au/view/index.aspx?id=352015
Snails	Land Snail	*Semotrachia illarana*	VU	.	www.landmanager.org.au/view/index.aspx?id=352025
Snails	Land Snail	*Semotrachia jessieana*	VU	.	www.landmanager.org.au/view/index.aspx?id=352035
Snails	Land Snail	*Semotrachia jinkana*	VU	.	www.landmanager.org.au/view/index.aspx?id=352045
Snails	Land Snail	*Semotrachia rossana*	VU	.	www.landmanager.org.au/view/index.aspx?id=352055
Snails	Runutjirbana Land Snail	*Semotrachia runutjirbana*	VU	.	www.landmanager.org.au/view/index.aspx?id=352065
Snails	Winnecke Land Snail	*Semotrachia winneckeana*	VU	.	www.landmanager.org.au/view/index.aspx?id=352075
Snails	Victoria's Land Snail	*Setobaudinia victoriana*	VU	.	www.landmanager.org.au/view/index.aspx?id=183161
Snails	Bednall's Land Snail	*Sinumelon bednalli*	CR	EN	www.landmanager.org.au/view/index.aspx?id=352085
Snails	Watt's Land Snail	*Vidumelon wattii*	VU	.	www.landmanager.org.au/view/index.aspx?id=352095
Snails	Land Snail	*Trochomorpha melvillensis*	VU	.	www.landmanager.org.au/view/index.aspx?id=183175
Insects	Desert sand skipper	*Croitana aestiva*	EN	EN	www.landmanager.org.au/view/index.aspx?id=351715
Insects	Gove Crow Butterfly	*Euploea alcathoe enastri*	EN	EN	www.landmanager.org.au/view/index.aspx?id=183196
Insects	Dodd's Azure Butterfly	*Ogyris iphis doddi*	EN	.	www.landmanager.org.au/view/index.aspx?id=183189
Insects	Atlas Moth	*Attacus wardi*	EN	.	www.landmanager.org.au/view/index.aspx?id=183182
Fish	Grey Nurse Shark	*Carcharias taurus*	.	CR/VU	www.landmanager.org.au/view/index.aspx?id=280663

Group	English Name	Scientific Name	NT Status	National Status	Info*
Fish	Speartooth Shark	*Glyphis* sp. A	VU	CR	www.landmanager.org.au/view/index.aspx?id=177020
Fish	Northern River Shark	*Glyphis* sp. C	EN	EN	www.landmanager.org.au/view/index.aspx?id=176973
Fish	Whale Shark	*Rhincodon typus*	.	VU	www.landmanager.org.au/view/index.aspx?id=280670
Fish	Dwarf Sawfish	*Pristis clavata*	VU	.	www.landmanager.org.au/view/index.aspx?id=176943
Fish	Freshwater Sawfish	*Pristis microdon*	VU	VU	www.landmanager.org.au/view/index.aspx?id=176261
Fish	Green Sawfish	*Pristis zijsron*	VU	.	www.landmanager.org.au/view/index.aspx?id=176965
Fish	Finke Goby	*Chlamydogobius japalpa*	VU	.	www.landmanager.org.au/view/index.aspx?id=351745
Fish	Angalarri Grunter	*Scortum neili*	VU	.	www.landmanager.org.au/view/index.aspx?id=176899
Fish	Lorentz's Grunter	*Pingalla lorentzi*	VU	.	www.landmanager.org.au/view/index.aspx?id=177195

* Click on the hotlinks on the right to go to the management-related information of on the North Australian Land Managers web site

CR = Critically Endangered **CR/VU** = One Critically Endangered population/One Vulnerable population
EN = Endangered **VU** = Vulnerable

Extinct species (no management guidelines provided)

Group	English Name	Scientific Name	NT Status	National Status	Info*
Birds	Slender-billed Thornbill	*Acanthiza iredalei*	EX	VU	www.landmanager.org.au/view/index.aspx?id=351875
Birds	Roper River Scrub-robin	*Drymodes superciliaris colcloughi*	.	EX	www.landmanager.org.au/view/index.aspx?id=351815
Mammals	Western Quoll	*Dasyurus geoffroii*	EX	VU	www.landmanager.org.au/view/index.aspx?id=247303
Mammals	Red-tailed Phascogale	*Phascogale calura*	EX	EN	www.landmanager.org.au/view/index.aspx?id=351845
Mammals	Numbat	*Myrmecobius fasciatus*	EX	VU	www.landmanager.org.au/view/index.aspx?id=351825

Group	English Name	Scientific Name	NT Status	National Status	Info*
Mammals	Pig-footed Bandicoot	*Chaeropus ecaudatus*	EX	EX	www.landmanager.org.au/view/index.aspx?id=351835
Mammals	Desert Bandicoot	*Perameles eremiana*	EX	EX	www.landmanager.org.au/view/index.aspx?id=351705
Mammals	Lesser Bilby	*Macrotis leucura*	EX	EX	www.landmanager.org.au/view/index.aspx?id=351755
Mammals	Brush-tailed Bettong	*Bettongia penicillata*	EX	.	www.landmanager.org.au/view/index.aspx?id=351645
Mammals	Central Hare-wallaby	*Lagorchestes asomatus*	EX	EX	www.landmanager.org.au/view/index.aspx?id=351665
Mammals	Crescent Nailtail Wallaby	*Onychogalea lunata*	EX	EX	www.landmanager.org.au/view/index.aspx?id=351685
Mammals	Lesser Stick-nest Rat	*Leporillus apicalis*	EX	EX	www.landmanager.org.au/view/index.aspx?id=351765
Mammals	Short-tailed Hopping-mouse	*Notomys amplus*	EX	EX	www.landmanager.org.au/view/index.aspx?id=351865
Mammals	Long-tailed Hopping-mouse	*Notomys longicaudatus*	EX	EX	www.landmanager.org.au/view/index.aspx?id=351785
Mammals	Burrowing Bettong (inland)	*Bettongia lesueur graii*	ER	EX	www.landmanager.org.au/view/index.aspx?id=351655

* Click on the hotlinks on the right to go to the management-related information of on the North Australian Land Managers web site

EX = Extinct

King Fern

Angiopteris evecta

What it looks like: The King Fern, elsewhere known as the Giant Fern, is a distinctive large ground-dwelling fern with massive green fronds arising from a short or non-existent trunk.

Where it lives: While found at scattered locations through rainforested areas of eastern Australia and across the globe, in the Northern Territory, King Ferns are known only from one place - in north-eastern Arnhem Land. Like most large ferns, King Ferns are dependent on a moist, shady environment. In the Northern Territory, they grow only around a single perennial spring in a monsoon rainforest patch, in a narrow sandstone gorge.

Importance as an indicator: With its restricted distribution and narrow habitat requirements, persistence of King Fern in Arnhem Land will be a good indicator of the health of the monsoon thicket in which it grows. The wet conditions it requires are particularly sensitive to changes in hydrology caused by unseasonably dry weather or water extraction. Drying out of the rainforest may allow incursions by fire.

Look after King Fern and other plants of monsoon rainforests by managing fire well. Back-burning around rainforest patches early in the year to reduce fuel hazards will protect these sensitive habitats from periodic fire incursions. However, repeated burning may promote the growth of Annual Sorghum, which increases fire hazard. So try not to burn exactly the same place every year. If necessary, burn after the first wet season storms to control Sorghum and reduce fire hazard. Make sure decisions about developments in the catchment consider impacts on groundwater availability.

Photo: *© Martin Armstrong*

Northern Territory Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=251667

Last updated September 2008

Best practice management for King Fern in the Northern Territory

- **Protect rainforest habitat**
- **Maintain tree cover**
- **Manage fire**
- **Manage water extraction sustainably**

Filmy Fern

Cephalomanes obscurum

What it looks like: This Filmy Fern is a small, spreading ground fern that grows to about 20 cm high. Its finely-divided foliage of dull, dark green leaflets may include a mixture of dead or partially dead fronds.

Where it lives: Filmy Ferns grow in shady, wet places, such as damp gullies, along creek banks, under rock ledges, in rainforest patches or by permanent waterfalls. Though sensitive to desiccation, Filmy Ferns enjoy disturbance, often colonising bare ground. In the Northern Territory, they are extremely rare, known only from small areas on Melville Island and in Arnhem Land. They also occur in eastern Australia, and from India to the Solomon Islands.

Importance as an indicator: This fern is entirely dependent on the health of the rainforest patches and riverine environments in which it occurs, particularly on the continued availability of shade and moisture through the dry season. As it is killed by fire, its persistence will depend on good fire management in drier vegetation adjoining its rainforest habitat.

Look after Filmy Fern and other shade- and moisture-loving plants protecting their rainforest habitat. Ensure any water extraction does not reduce moisture availability to this species through to the end of the dry season. Back-burning around rainforest patches early in the year to reduce fuel hazards will protect these sensitive habitats from periodic fire incursions. However, repeated burning may promote the growth of Annual Sorghum, which increases fire hazard. So try not to burn exactly the same place every year. If necessary, burn after the first wet season storms to control Sorghum and reduce fire hazard and reduce fire hazard. Control pigs that root up the ground layer in moist places looking for food. Water extraction decisions in the catchment should consider impacts on Filmy Fern.

Photo: © *Kym Brennan*

Northern Territory Status: Endangered

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=351065

Last updated September 2008

Best practice management for Filmy Fern in the Northern Territory

- **Protect rainforest habitat**
- **Maintain tree cover**
- **Maintain ground layer**
- **Control pest animals**
- **Control weeds**
- **Manage fire**
- **Manage water extraction sustainably**

Venus-hair Fern

Adiantum capillus-veneris

What it looks like: Venus-hair Fern is a dainty fern, with soft, weeping foliage. Its dark shiny stipes can be half a metre tall, and arise from a creeping underground stem.

Where it lives: In the Northern Territory, Venus-hair Fern is known only from the West MacDonnell Ranges and near Gregory National Park. It also grows at several locations scattered across mainland Australia, and is widespread in many other countries. Venus-hair Fern is usually associated with lime-rich soils. In the Northern Territory, it grows on crevices in limestone, quartzite or sandstone rocks, or on alkaline soils, close to water, often in association with springs.

Importance as an indicator: Presence of Venus-hair Fern is an indicator of good riparian health. Its reliance on spring waters, means it is likely to be sensitive to any diminution of ground water levels. Also grazing animals, particularly pigs, may destroy wetlands habitat by trampling and rooting the ground around wetlands.

Look after Venus-hair Fern and other water-loving plants by limiting water extraction to sustainable levels. Restrict access of domestic livestock to wetlands and control pigs, which foul the water and pug the soil around wetlands looking for food.

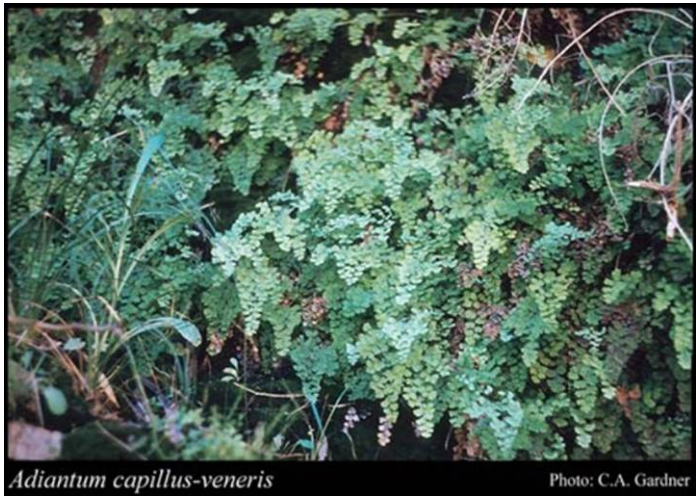


Photo: *© C.A. Gardener*[†]

Northern Territory Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=251577

Last updated September 2008

Best practice management for Venus-hair Fern in the Northern Territory

- **Maintain ground layer**
- **Control pest animals**
- **Manage water extraction sustainably**

[†]Image used with the permission of the Western Australian Herbarium, Department of Environment and Conservation (florabase.dec.wa.gov.au/help/ copyright). Accessed on Monday, 7 July, 2008.

Victoria River Coral Fern

Gleichenia sp. Victoria River (I.D.Cowie 9193)

What it looks like: Victoria River Coral Fern is a large spreading fern that can be erect or weeping. Its bright green fronds have numerous divided leaflets. They extend from a long stipe, forming up to three tiers of branches between 9 and 200 cm long.

Where it lives: Victoria River Coral Fern grows in seepage areas near springs at the base of sandstone scarps or rock overhangs. It is known only from the Victoria River Gorge, in the Northern Territory.

Importance as an indicator: With its restricted distribution and narrow habitat requirements, Victoria River Coral Fern will depend on good environmental management. Its persistence may be threatened by disturbance by pigs, exotic weed infestation or any change in hydrology. Its single population may also be particularly sensitive to rock slides.

Look after Victoria River Coral Fern by controlling pigs that root up the ground layer in moist places looking for food. Ensure waterways and riverine vegetation do not become invaded by weeds that might out-compete Victoria River Coral Fern. Ensure any water extraction does not reduce moisture availability to this species through to the end of the dry season.

Photo: *© Kym Brennan*

Northern Territory Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=256801

Last updated September 2008

Best practice management for Victoria River Coral Fern in the Northern Territory

- **Maintain ground layer**
- **Control pest animals**
- **Control weeds**
- **Manage water extraction sustainably**
- **Protect wetland habitat**

Shiny Fan Fern

Sticherus flabellatus var. *compactus*

What it looks like: Shiny Fan Fern is a terrestrial fern with bright green finely divided fronds. Up to three pairs of spreading fronds arising from a central stipe give the plant a star-like appearance.

Where it lives: This compact form of Shiny Fan Fern is only known to grow in north-eastern Queensland and at one place in north-eastern Arnhem Land in the Northern Territory. In Arnhem Land, it grows in vine forests in gullies in the sandstone. In Queensland, Shiny Fan Fern forms dense colonies along creeks and rivers on damp banks, river flats or among rocks and boulders in other wet places. The dominant variety of Shiny Fan Fern (illustrated here) is more widespread, occupying similar habitat as far south as Victoria, as well as in New Zealand and New Caledonia.

Importance as an indicator: With its restricted distribution and narrow habitat requirements, Shiny Fan Fern will depend on good environmental management. Its persistence may be threatened by disturbance by pigs, exotic weed infestation or any change in hydrology. However, its single population may also be particularly sensitive to chance climatic events such as cyclones that destroy the tree canopy.

Look after Shiny Fan Fern by controlling pigs that root up the ground layer in moist places looking for food. Ensure waterways and riverine vegetation do not become invaded by weeds that might out-compete Shiny Fan Fern. Ensure any water extraction does not reduce moisture availability to this species through to the end of the dry season.

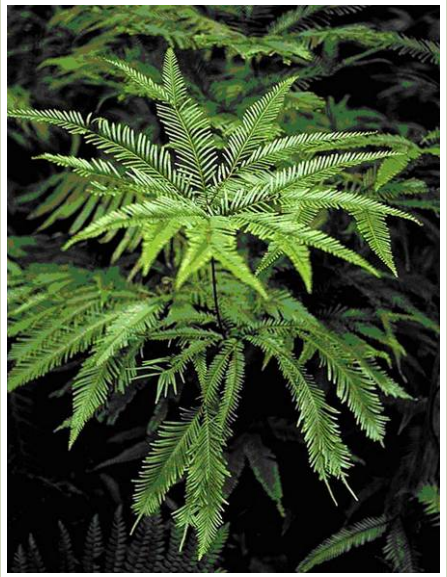


Photo: © D. Greig[†]

Northern Territory Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=351485

Last updated September 2008

Best practice management for Shiny Fan Fern in the Northern Territory

- **Maintain tree cover**
- **Maintain ground layer**
- **Control pest animals**
- **Control weeds**
- **Manage water extraction sustainably**

[†]Image used with the permission of the Australian National Botanical Gardens www.anbg.gov.au/anbg/index.html. Accessed on Monday, 7 July, 2008

Armstrong's Cycad

Cycas armstrongii

What it looks like: Armstrong's Cycad is a slender single-trunk plant that grows up to 6 metres tall. On female plants large, round seeds cluster around the trunk in short broads chains below metre-long fronds. Male plants bear large cones. Most cycads are poisonous to stock.

Where it lives: This species occurs only in the Northern Territory. It is known from Gunn Point to Hayes Creek, west to within 50 km of the coast and east to the Wildman River catchment, and also occurs on the Tiwi Islands and Cobourg Peninsula. It grows mainly in open grassy woodland on yellow and red earths, limited in the area by drainage.

Importance as an indicator: Presence of Armstrong's Cycads indicates a healthy environment with limited disturbance by grazing animals or weeds, and a well-managed fire regime.

Look after Armstrong's Cycad by controlling pigs and their predation on seeds, and exclude stock to prevent them being poisoned. Use early dry season burning to break up the fuel layer and prevent repeated late dry season fires. Control weeds (particularly Gamba Grass) that may replace the cycads and alter fire regimes.

Photo: *© Dave Liddle*

Northern Territory Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=351085

Last updated September 2008

Best practice management for Armstrong's Cycad in the Northern Territory

- **Do not clear habitat**
- **Maintain tree cover**
- **Maintain shrub layer**
- **Control pest animals**
- **Control weeds**
- **Fence key habitat**
- **Manage fire**

MacDonnell Ranges Cycad

Macrozamia macdonnellii

What it looks like: MacDonnell Ranges Cycad is a tall plant with coarse, dull blue green foliage. It bears male and female cones on separate plants. The female cones can be as much as half a metre long.

Where it lives: MacDonnell Ranges Cycad grows on shallow soils in rocky sites, predominantly in gorges and on steep sheltered slopes, but occasionally on exposed hills or mountain tops. The species is thought to be very long lived. It is found only in the Northern Territory, scattered across the MacDonnell Ranges bioregion.

Importance as an indicator: The distribution of this species appears to be defined more by habitat availability than by threatening processes. However, the well-shaded, moist environments that it prefers may become more scarce if there is a further drying of the climate. Also, high fire frequency has been identified as an issue in some sites. The illegal collection of seed for the horticultural trade is a potential threat to accessible populations.

Look after MacDonnell Ranges Cycad by developing a patchy fire regime that ensures several years between fires. Limit fire intensity by burning fire breaks when significant ground layer fuel starts to accumulate. Keep creek lines free of Buffel Grass, which increases fire hazard.

Photo: *© NRETA*

Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Preece L.D., Duguid A.W. & Albrecht D.E. 2007. Environmental determinants of a restricted cycad in central Australia, *Macrozamia macdonnellii*. *Australian Journal of Botany* 55, 601-607.

Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=351325

Last updated September 2008

Best practice management for MacDonnell Ranges Cycad in the Northern Territory

- **Maintain shrub layer**
- **Control weeds**
- **Manage fire**
- **Do not collect from the wild**

Mitrella

Mitrella tiwiensis

What it looks like: Mitrella starts life as a semi-weeping shrub but develops into a vine that can reach 10 metres into the canopy. It has zig-zagged branchlets and shiny, dark-green leaves that are bluish underneath. Its clusters of scented, pinkish-orange flowers develop into pale pinkish-green fruit.

Where it lives: Mitrella grows in deep shade in moist leaf litter and stagnant mulch in monsoon rainforest associated with perennial springs. It is found only on the Tiwi Islands, where it is known from nine localities.

Importance as an indicator: Persistence of Mitrella is one indicator of the health of the rainforest in which it lives. The wet conditions it requires are particularly sensitive to changes in hydrology caused by unseasonably dry weather, vegetation clearance or water extraction. Drying out of the rainforest may allow incursions by fire. These rainforests may also be degraded by cattle, buffalo and pigs. Feral pigs, in particular are attracted to wet areas in rainforests, where they dig up the soil looking for roots and tubers. Extreme climatic events, such as cyclones, can also cause rainforest degradation.

Look after Mitrella by protecting rainforest stands from clearance and disturbance. Manage fire in drier vegetation adjoining its rainforest habitat. Back-burn away from rainforest stands early in the dry season or after the first wet season storms to break up the fuel layer and prevent incursions by late dry season fires. Control weeds (such as Mission Grass) that increase fuel loads and fire hazards. Make sure decisions about developments in the catchments consider impacts on groundwater availability. Control feral animals with effective methods, such as shooting, baiting or trapping.

Photo: *© Kym Brennan*

Northern Territory Status: Vulnerable
Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=257208

Last updated September 2008

Best practice management for Mitrella in the Northern Territory

- **Protect rainforest habitat**
- **Maintain tree cover**
- **Control pest animals**
- **Control weeds**
- **Fence key habitat**
- **Manage fire**
- **Manage water extraction sustainably**
- **Report new populations**

Xylopia

Xylopia monosperma

What it looks like: Xylopia is an open shrub or erect sapling that can grow to 3 metres high. It holds its primary branches perpendicular to its central stem. The alternating leaves are also held horizontally, and, in some plants, have wavy margins, giving the plant a feathery appearance.

Where it lives: Xylopia is an understorey plant of wet rainforests, and grows in association with springs. It is known from only a few places in the Northern Territory - all on the Tiwi Islands - and is also present on Cape York Peninsula, Queensland.

Importance as an indicator: Xylopia only occurs in intact rainforest, so will not persist where rainforest is cleared. The wet conditions it requires are particularly sensitive to changes in hydrology caused by unseasonably dry weather, vegetation clearance or water extraction. Drying out of the rainforest may allow incursions by fire. As Xylopia is killed by fire, its persistence will be a good indicator of fire management.

Look after Xylopia by protecting rainforest from clearance and disturbance. Manage fire in drier vegetation adjoining its rainforest habitat. Back-burn away from rainforest stands early in the dry season or after the first wet season storms to break up the fuel layer and prevent incursions by late dry season fires. Control weeds (such as Mission Grass) that increase fuel loads and fire hazard. Control feral animals, especially pigs which dig up plants looking for food. Make sure decisions about developments in the catchments consider impacts on groundwater availability.

Photo: *© Dave Liddle*

Northern Territory Status: Endangered
Australian Status: Endangered

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=257459

Last updated September 2008

Best practice management for Xylopia in the Northern Territory

- **Protect rainforest habitat**
- **Maintain tree cover**
- **Maintain shrub layer**
- **Control pest animals**
- **Control weeds**
- **Fence key habitat**
- **Manage fire**
- **Manage water extraction sustainably**

Northern Laurel

Cryptocarya hypospodia

What it looks like: Northern Laurel, also known as White Walnut, is a tall tree with simple leaves, and peppery-smelling bark. As with many laurels, its leaves are paler below than above. Its clusters of inconspicuous pale brown flowers develop into round green fruit that turn black as they ripen.

Where it lives: Northern Laurel is a tree of rainforests and gallery forests, often emerging through the canopy. Though relatively common in eastern Australian and Papua New Guinea, in the Northern Territory, it appears to be restricted to Croker Island, where fewer than 250 individuals are known.

Importance as an indicator: Northern Laurel is an important food resources. Its fruits are taken by birds, and its leaves are eaten by caterpillars or a range of butterflies. The persistence of Northern Laurel depends on the health of the rainforests in which it lives, in particular, the management of pigs that dig up the rainforest floor have the potential to disrupt rainforest ecology. While the species can resprout after fire, long term persistence of rainforest will be disadvantaged by frequent incursions of fire.

Look after Northern Laurel by controlling pigs using methods that have been shown to be effective, such as trapping and baiting. If necessary protect important rainforest patches with pig-proof fencing. Manage fire in the adjoining drier woodlands. Back-burning around rainforest patches early in the year to reduce fuel hazards will protect these sensitive habitats from periodic fire incursions. However, repeated burning may promote the growth of Annual Sorghum, which increases fire hazard. So try not to burn exactly the same place every year. If necessary, burn after the first wet season storms to control Sorghum and reduce fire hazard and reduce fire hazard.

Photo: *© Martin Armstrong*

Northern Territory Status: Endangered

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=252554

Last updated September 2008

Best practice management for Northern Laurel in the Northern Territory

- **Protect rainforest habitat**
- **Maintain tree cover**
- **Control pest animals**
- **Report new populations**

Native Walnut

Endiandra limnophila

What it looks like: Native Walnut is a rainforest tree that can sometimes grow up to 20 metres tall. It has shiny green leaves that are bluish underneath. Its pale green to cream flowers, which are sometimes perfumed, turn brown as they mature, and produce black fruit.

Where it lives: Native Walnut grows in swampy soils in well-developed rainforest, often along the edges of creeks. This rainforest tree is known only from the Tiwi Islands and Channel Point, in the Northern Territory, as well as at the tip of Cape York Peninsula in Queensland.

Importance as an indicator: The long term persistence of Native Walnut is one indicator of the health of the rainforest in which this species lives. The wet conditions it requires are particularly sensitive to changes in hydrology caused by unseasonably dry weather, vegetation clearance or water extraction. Drying out of the rainforest may allow incursions by fire. Feral pigs are also attracted to wet areas in rainforests, where they dig up the soil looking for roots and tubers, and prevent the recruitment of new rainforest plants.

Look after Native Walnut by protecting rainforest stands from clearance and disturbance. Manage fire in drier vegetation adjoining its rainforest habitat. Back-burn away from rainforest stands early in the dry season or after the first wet season storms to break up the fuel layer and prevent incursions by late dry season fires. Control weeds (such as Mission Grass) that increase fuel loads and fire hazards. Make sure decisions about developments in the catchments consider impacts on groundwater availability. Control pigs with baits and traps.

Photo: © Dave Liddle

Northern Territory Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=253038

Last updated September 2008

Best practice management for Native Walnut in the Northern Territory

- **Protect rainforest habitat**
- **Maintain tree cover**
- **Control pest animals**
- **Control weeds**
- **Manage fire**
- **Manage water extraction sustainably**

Lantern Tree

Hernandia nymphaeifolia

What it looks like: Lantern Tree is a bushy shrub or tree that can grow as tall as 22 metres high, but is usually much smaller. It has rubbery, heart-shaped leaves that are joined to the leaf-stalk partway down the leaf. Its greenish-white inflorescences consist of several clusters of one female and two male flowers, which are fragrant. The fruit is fleshy, waxy white or reddish.

Where it lives: Lantern Tree is a plant of coastal areas and grows in littoral forest and in coastal swamps. Found throughout the tropics, in the Northern Territory, it has only been recorded from Groote Eylandt and Arnhem Land.

Importance as an indicator: The restricted distribution of this species probably reflects a limited area of suitable habitat in the Northern Territory, rather than environmental management. However, elsewhere the habitat of this species is under pressure from coastal development.

Look after Lantern Tree There is little need to look after Lantern Tree which occurs away from any evident threats. However, proposals to propagate the species in botanic gardens would preserve the genetic stock in the event the species becomes extinct in the wild.

Photo: *© Kym Brennan*

Northern Territory Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=253736

Last updated September 2008

Best practice management for Lantern Tree in the Northern Territory

- **Maintain tree cover**
- **Maintain shrub layer**
- **Establish additional populations**

Warren's Mangosteen

Garcinia warrenii

What it looks like: Warren's Mangosteen is a medium-sized rainforest tree with simple, opposite leaves that have parallel veins. Broken petioles and twigs produce a yellow sap.

Where it lives: Warren's Mangosteen is a plant of well-developed rainforest and riparian areas in Far North Queensland and Papua New Guinea. A single record for the Northern Territory comes from a mangrove encircled hill, in the Jessie River on Melville Island.

Importance as an indicator: Presence of Warren's Mangosteen in the Tiwi Islands may be a remnant from a former, more widespread distribution of this species, or the product of a chance dispersal event. A severe climatic event or sea level rise are the most significant threats facing this species, which grows in an otherwise protected environment.

Look after Warren's Mangosteen There is little need to look after Warren's Mangosteen in its current location, unless surveys reveal further populations. However, proposals to propagate the species in botanic gardens would preserve the genetic stock in the event the species becomes extinct in the wild. The Darwin Herbarium would be interested to hear of any new records of this plant.

Photo: © *Martin Armstrong*

Northern Territory Status: Endangered

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=253423

Last updated September 2008

Best practice management for Warren's Mangosteen in the Northern Territory

- **Protect rainforest habitat**
- **Maintain tree cover**
- **Report new populations**
- **Establish additional populations**

Quandong

Elaeocarpus miegei

What it looks like: This Quandong is a tall, sometimes buttressed tree that can grow up to 35 metres. Its leaves are clustered at the end of the branches. It has white flowers and round green fruit.

Where it lives: Quandongs grows in permanently moist soils in wet rainforest. In Australia, it is known only from the Tiwi Islands. It also grows in Papua New Guinea, Malesia and the Solomon Islands.

Importance as an indicator: Long term persistence of Quandong is one indicator of the health of the rainforest in which this species lives. The wet conditions it requires are particularly sensitive to changes in hydrology caused by unseasonably dry weather, vegetation clearance or water extraction. Drying out of the rainforest may allow incursions by fire. Feral pigs are also attracted to wet areas in rainforests, where they dig up the soil looking for roots and tubers.

Look after Quandong by protecting rainforest stands from clearance and disturbance. Manage fire in drier vegetation adjoining its rainforest habitat. Back-burn away from rainforest stands early in the dry season or after the first wet season storms to break up the fuel layer and prevent incursions by late dry season fires. Control weeds (such as Mission Grass) that increase fuel loads and fire hazards. Make sure decisions about developments in the catchments consider impacts on groundwater availability. Control pigs with baits and traps. If this is not successful, consider fencing significant stands to exclude feral animals.

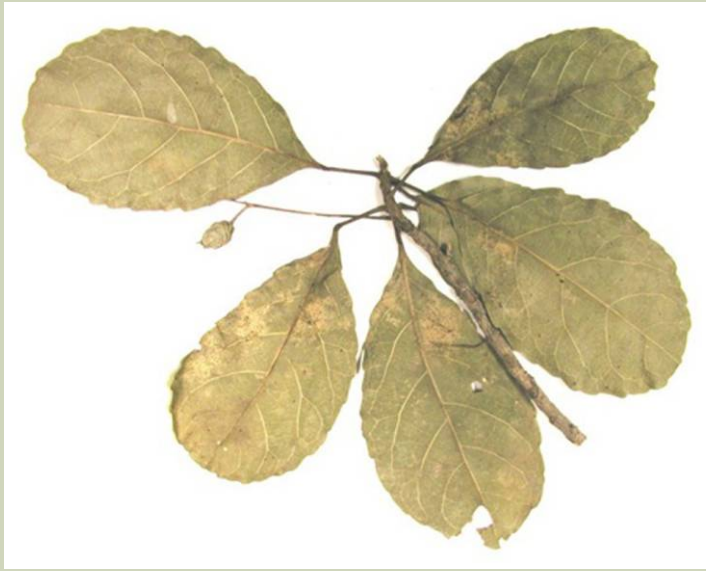


Photo: *© Martin Armstrong*

Northern Territory Status: Critically Endangered

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=252993

Last updated September 2008

Best practice management for Quandong in the Northern Territory

- **Do not clear habitat**
- **Protect rainforest habitat**
- **Maintain tree cover**
- **Control pest animals**
- **Control weeds**
- **Fence key habitat**
- **Manage fire**
- **Manage water extraction sustainably**

Yellow Star

Schoutenia ovata

What it looks like: Yellow Star is a shrub or tree that rarely grows taller than 5 metres high. The pale green leaves are yellowish underneath and covered in short brown hairs. They are rounded at the base and broaden towards to an extended drip tip. Leaves on young plants are also irregular lobed towards this tip. Yellow Star has clusters of yellowish-white flowers. Its round fruits are framed by star-shaped remnants of the flower.

Where it lives: In the Northern Territory, Yellow Star grows in monsoon rainforests on granite outcrops in the Mt Bundy area and on limestone outcrops near Tipperary Station. It also occurs through South-east Asia.

Importance as an indicator: Long term persistence of Yellow Star indicates intact rainforest with limited disturbance by weeds or feral animals, a well-managed fire regime, and a reliable water table. The wet monsoon thickets in the Tipperary area may be heavily impacted by pigs digging for roots and tubers. They may also be sensitive to changes in hydrology caused by unseasonably dry weather, vegetation clearance or water extraction. Drying out of these rainforests could allow incursions by fire. Although able to resprout after fire, Yellow Star will probably be eliminated by frequent burning. Fire is the only likely threat to plants growing on granite hills in the Mt Bundy area.

Look after Yellow Star by controlling pigs, which disturb rainforest soils. Back-burn away from rainforest stands early in the dry season or after the first wet season storms to break up the fuel layer and prevent incursions by late dry season fires. Around the rainforest edge, control weeds (such as Gamba Grass and Mission Grass) that increase fuel loads and fire hazards. Ensure water extraction considers the potential for lowered water tables to adversely affect rainforests.

Photo: © *Brian Reid*

Northern Territory Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=255180

Last updated September 2008

Best practice management for Yellow Star in the Northern Territory

- **Protect rainforest habitat**
- **Maintain tree cover**
- **Maintain shrub layer**
- **Control pest animals**
- **Control weeds**
- **Manage fire**

Helicteres

Helicteres sp. Glenluckie Creek (N.B.Byrnes 1280)

What it looks like: This Helicteres is a small, semi-woody shrub that dies back to perennial rootstock as dry conditions set in. It has grey-green woolly foliage and produces small clusters of pink flowers in the leaf axils that develop into green furry fruit.

Where it lives: This species of Helicteres grows in woodlands dominated by Darwin Box (*Eucalyptus tectifica*) or Darwin Woollybutt (*Eucalyptus miniata*), on sandy loam over rocky siltstone slopes or granite. It is only known from three places in the Top End of the Northern Territory.

Importance as an indicator: Persistence of this Helicteres will increasingly depend on good environmental management. Clearing for subdivision and maintenance of infrastructure threaten two of the known populations. Disturbance associated with these activities is likely to expose the habitat of this rare plant to invasion by transformer weeds, with an increased incidence of intense fires. If developments for subdivision proceed, other disturbance factors, such as clearance, conversion of native vegetation to domestic gardens and yarding of horses are all potential threats.

Look after Helicteres by controlling Gamba Grass and Mission Grass, which can totally replace this and all other ground cover plants and increase fire hazard. Weed hygiene measures will be particularly important, and all vehicles and other equipment used in or near the habitat should be thoroughly cleaned to remove weed seeds. Maintain native species in preference to exotic garden plants in any rural subdivision, and consider native plant values before introducing livestock to rural blocks. If all else fails, representative areas of habitat could be fenced and managed primarily for this species, and new populations established in secure locations, including botanical gardens.

Photo: *© NRETA*

Northern Territory Status: Endangered
Australian Status: Endangered

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=256854

Last updated September 2008

Best practice management for Helicteres in the Northern Territory

- **Do not clear habitat**
- **Maintain shrub layer**
- **Control pest animals**
- **Control weeds**
- **Fence key habitat**
- **Manage fire**
- **Establish additional populations**

Brennan's Native Hibiscus

Hibiscus brennanii

What it looks like: Brennan's Native Hibiscus is a tall, woody shrub with velvety grey-green heart-shaped leaves. Its large pink flowers have a dark centre and its fruits are spineless.

Where it lives: Brennan's Native Hibiscus grows on cliffs and in gullies in fractured sandstone country. Restricted to the Northern Territory, it is only found in the Mt Brockman area to the west of Arnhem Land.

Importance as an indicator: The highly restricted distribution of this species in naturally fire-protected environments suggests fire exclusion is essential for its survival. Apparently killed by fire, it is likely to require a few years between fires to mature and reproduce successfully.

Look after Brennan's Native Hibiscus and other fire sensitive species by implementing a fire regime that ensures patches of long-unburnt country. To do this, establish a network of fires early in the year, linking with natural fire breaks, such as rivers and roads. Avoid burning areas known to support fire sensitive plants.

Photo: © Kym Brennan

Northern Territory Status: Vulnerable
Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=253778

Last updated September 2008

Best practice management for Brennan's Native Hibiscus in the Northern Territory

- **Maintain shrub layer**
- **Manage fire**

Craven's Native Hibiscus

Hibiscus cravenii

What it looks like: Craven's Native Hibiscus is a medium-sized shrub, densely clothed in yellow to brown hairs. The large pink flowers have a deep red centre and turn blue as they wither.

Where it lives: Craven's Native Hibiscus has been recorded growing in sandy soils at the base of sandstone escarpments, and less frequently, on sandstone scree slopes. Restricted to the Northern Territory, it is known only from a small area in Keep River National Park.

Importance as an indicator: The highly restricted distribution of this species in essentially fire-protected environments suggests fire exclusion is essential for its survival. Apparently killed by fire, it is likely to require a few years between fires to mature and reproduce successfully.

Look after Craven's Native Hibiscus and other fire sensitive species by implementing a fire regime that ensures patches of long-unburnt country. To do this, establish a network of fires early in the year, linking with natural fire breaks, such as rivers and roads. Avoid burning areas known to support fire sensitive plants.

Photo: *© NRETA*

Northern Territory Status: Vulnerable
Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=251622

Last updated September 2008

Best practice management for Craven's Native Hibiscus in the Northern Territory

- **Maintain shrub layer**
- **Manage fire**

Tobermorey Melon

Mukia sp. Tobermorey Station (D.E.Albrecht 6322)

What it looks like: Tobermorey Melon scrambles across the ground and over low-growing plants, attaching to anything it touches with its tightly coiled tendrils. Its five-lobed leaves resemble those of a grape-vine, and have seven prominent veins radiating from the point where the leaf stalk attaches. This vine produces separate, pale yellow, male and female flowers and egg-shaped fruit.

Where it lives: Tobermorey Melon grows along ephemeral creeks and in poorly drained areas on cracking clay plains. It is most abundant in seasonal swamps, clay pans and run-on areas. It has been recorded from Bluebush (*Maireana* spp.) swamps, Gidgee (*Acacia cambagei*) shrubland and riparian woodlands dominated by River Red Gum (*Eucalyptus camaldulensis*). This vine is known from only a few places in the Mitchell Grass Downs and Channel Country in the Northern Territory and Queensland.

Importance as an indicator: Tobermorey Melon may be a good indicator of grazing land condition, particularly that of riparian environments, which are selectively grazed by both stock and feral animals. It may also be sensitive to any reduction in water availability caused by construction of dam or turkey nests.

Look after Tobermorey Melon by fencing creeklines and run-on areas to allow management of grazing pressure. Providing stock with off-site waterpoints will help avoid overgrazing around natural waterholes, but it is important that unused water is returned to the waterway. Control feral animals that can contribute as much to grazing pressure as do domestic livestock.

Photo: *© Martin Armstrong*

Northern Territory Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=257219

Last updated September 2008

Best practice management for Tobermorey Melon in the Northern Territory

- **Maintain ground layer**
- **Control pest animals**
- **Graze moderately & periodically spell country from grazing**
- **Fence key habitat**
- **Protect wetland habitat**
- **Report new populations**

Tjilpi Wattle

Acacia latzii

What it looks like: Tjilpi Wattle is a spreading shrub or small tree that can grow up to 4 metres high. It has thick rough bark and harsh, grey-green foliage. Its flowers are clustered into tight yellow balls and develop into long thin pods.

Where it lives: The Tjilpi Wattle grows in pure stands, on low hills with skeletal soils, in steep gullies and along small rocky creeks near foothill slopes. In the Northern Territory, it is known from the Beddome and Bacon Ranges and parts of the Finke Region.

Importance as an indicator: Because this species is sensitive to fire, grazing and trampling, healthy stands of Tjilpi Wattle is a good indicator of environments in which fire, and domestic and feral grazing animals are well managed.

Look after Tjilpi Wattle by developing a patchy fire regime that ensures several years between fires. Limit fire intensity by burning fire breaks when significant ground layer fuel starts to accumulate. On pastoral properties, ensure a moderate grazing pressure. If this is not possible, consider fencing off small stands. Control rabbits, which prevent seedling establishment, and keep creek lines free of Buffel Grass, which both out-competes the wattles, and increases fire hazard. Staff at Parks and Wildlife, Alice Springs, would be interested in hearing about any new stands.

Photo: *© NRETA*

Northern Territory Status: Vulnerable
Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=350915

Last updated September 2008

Best practice management for Tjilpi Wattle in the Northern Territory

- **Maintain tree cover**
- **Maintain shrub layer**
- **Control pest animals**
- **Control weeds**
- **Graze moderately & periodically spell country from grazing**
- **Fence key habitat**
- **Manage fire**

Waddy Wood

Acacia peuce

What it looks like: Waddy Wood is a slender, erect tree, and can grow up to 18 metres tall. Long pendulous branchlets give mature trees a weeping, she-oak like appearance. The flowers of Waddy Wood are yellow and develop into large, flat, papery pods. The timber is very dense with a dark, red core.

Where it lives: Waddy Wood grows on stony flats or gibber plains between longitudinal dunes, on alluvial flats between watercourses and on low rocky rises. Suitable rocky habitat is of limited availability. Waddy Wood occurs in a very small area of south-eastern Northern Territory. Two additional, but separate populations are found in south-western Queensland.

Importance as an indicator: Though Waddy Wood trees may live to be 500 years old, they are extremely slow growing, and new plants are recruited to the population only after extended periods of heavy rainfall. So even a gradual loss of trees could cause local extinctions of this species. Maintenance of Waddy Wood populations therefore requires careful environmental management.

Look after Waddy Wood by ensuring fires are neither frequent nor intense, as trees can be killed by fire. All stands in Mac Clark Conservation Reserve and adjoining Andado Pastoral Lease have been fenced to prevent trees being grazed, trampled or ringbarked bark by cattle or other large herbivores. Staff at Parks and Wildlife, Alice Springs would be interested in hearing about new stands.

Photo: © NRETA

Northern Territory Status: Endangered
Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=251397

Last updated September 2008

Best practice management for Waddy Wood in the Northern Territory

- **Maintain tree cover**
- **Control pest animals**
- **Fence key habitat**
- **Manage fire**
- **Report new populations**

Bird's Nest Wattle

Acacia pickardii

What it looks like: Bird's Nest Wattle is a bushy shrub or tree that can grow to 5 metres high. It has golden globular flower heads. Distinctive, fruit-like galls commonly grow on the leaves of this species.

Where it lives: Bird's Nest Wattles typically grows on gibber-covered sandplains and stony rises and low hills, including mesas and tablelands, and adjacent flats. They usually form a low open woodland over an understorey of saltbush-shrubland or open-grassland. The species appears to be extremely rare in the Northern Territory, where it is known from only three populations on the edge of the Simpson Desert in the Andado Station-O'Neill Point area.

Importance as an indicator: Because this species is sensitive to grazing and fire, healthy stands of Bird's Nest Wattle are a good indicator of environments in which fire and domestic and feral herbivores are well managed. While the species resprouts after fire, too frequent fires may be lethal.

Look after Bird's Nest Wattle by ensuring fires are neither too frequent nor intense by burning fire breaks when significant ground layer fuel starts to accumulate. Limit impact of rabbits by controlling their numbers. Do not allow pastoral properties to be over-grazed.

Photo: *© Connie Spenser*

Northern Territory Status: Vulnerable
Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=350935

Last updated September 2008

Best practice management for Bird's Nest Wattle in the Northern Territory

- **Maintain tree cover**
- **Maintain shrub layer**
- **Control pest animals**
- **Graze moderately & periodically spell country from grazing**
- **Manage fire**

Wattle

Acacia praetermissa

What it looks like: This rare wattle usually grows as a multi-stemmed shrub, with 50 cm to 2 metre stems arising from the central rootstock. It has narrow, bluish leaves and bright yellow flowers in rod-like spikes. These features are found in several other wattles, so careful identification is required.

Where it lives: *Acacia praetermissa* is only found in the Northern Territory where it has been found in two populations along the Stuart Highway - one near Emerald Springs and another near Hayes Creek. This species usually grows on hillsides in lateritic skeletal soil in eucalypt woodland.

Importance as an indicator: As this species appears to have particular habitat requirements, its presence is likely to reflect soil conditions rather than management. However, well-developed stands indicate that fires are not too frequent to allow plants to develop to maturity.

Look after Wattle by developing a patchy fire regime that ensures several years between fires. Limit fire intensity by burning fire breaks when significant ground layer fuel starts to accumulate. This will allow plants to grow to maturity and produce seeds. Identification of all stands is also important so that road works can be diverted away from them. Consider fencing stands if there is evidence of grazing or trampling damage.

Photo: *© Kym Brennan*

Northern Territory Status: Vulnerable
Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=350945

Last updated September 2008

Best practice management for Wattle in the Northern Territory

- **Do not clear habitat**
- **Maintain shrub layer**
- **Fence key habitat**
- **Manage fire**

Graveside Gorge Wattle

Acacia sp. Graveside Gorge (V.J.Levitzke 806)

What it looks like: Graveside Gorge Wattle is a distinctive shrub with long soft brushes of grey-green needle-like leaves. Its bright yellow flower balls develop into short pods.

Where it lives: Graveside Gorge Wattle grows on rocky sandstone slopes and cliff ledges. It is known only from Kakadu National Park, and possibly only grows in Graveside Gorge, where two stands totalling fewer than 1,000 plants were recorded in 2006. Given the extent of botanical surveys in this area, it seems unlikely that further populations exist.

Importance as an indicator: A wildfire in 2004 resulted in the death of all but one mature plant in one stand, so persistence of Graveside Gorge Wattle will demonstrate an improvement in fire management. Periods between fires of any sort need to be long enough to allow the production of a reasonable seed bank. If Graveside Gorge Wattle is similar to other wattle species, an inter-fire interval of at least five years, and possibly longer, will be required.

Look after Graveside Gorge Wattle and other sandstone heath species by managing fire. To ensure there are long intervals between fires in any one location, it will be necessary to establish a protective network of burnt areas, starting early in the dry season. Take particular care to exclude fires from stands of fire sensitive species that have not yet begun to seed. Fire management of Graveside Gorge Wattle will be assisted by information about the ages at which this species begins to produce siginifcant seed, and at which it begins to senesce. Further surveys are required to established whether there are additional populations of this plant. Collection of seed to establish this species in botanic gardens will safeguard it against extinction in the wild.

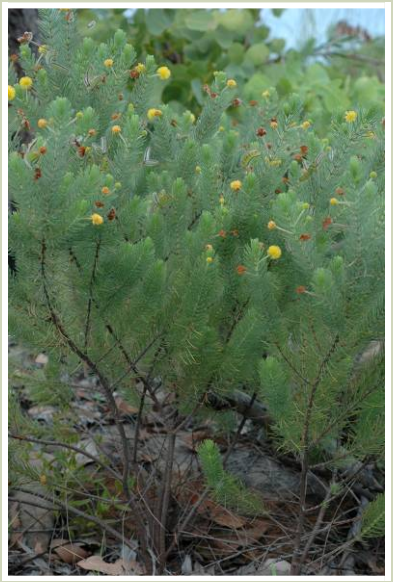


Photo: *© Kym Brennan*

Northern Territory Status: Critically Endangered
Australian Status: Critically Endangered

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=347363

Last updated September 2008

Best practice management for Graveside Gorge Wattle in the Northern Territory

- **Maintain shrub layer**
- **Manage fire**
- **Report new populations**
- **Establish additional populations**
- **More information is needed about this species**

Undoolya Wattle

Acacia undoolyana

What it looks like: The Undoolya Wattle is a small tree, usually no more than 8 metres tall, but on rare occasions reaches 11 metres. It is both slow growing and long-lived. Its leaves are strongly curved and silvery when fresh. It bears its flowers in dense rod-like spikes, and has straight pods.

Where it lives: Undoolya Wattles are found only in a small area in the East MacDonnell Ranges, near Alice Springs. They typically occur on steep south facing slopes and gullies of rocky sandstone or ranges, where there are shallow soils. They grow in association with spinifex, often in small patches or groves.

Importance as an indicator: The Undoolya Wattle is probably a good indicator of healthy fire regimes, where fires are far enough apart in time to allow the plants to mature and reproduce. Although plants of this species can survive fire, they may take several years after a fire to produce seed.

Look after Undoolya Wattle by managing fire to minimise the risk of severe wildfire entering stands from surrounding highly flammable spinifex-dominated plant communities. Develop a patchwork of fire ages by burning fire breaks when significant ground layer fuel starts to accumulate. Control infestations of Buffel Grass in and around stands of Undoolya Wattle, as this introduced grass may increase fire frequency and intensity.

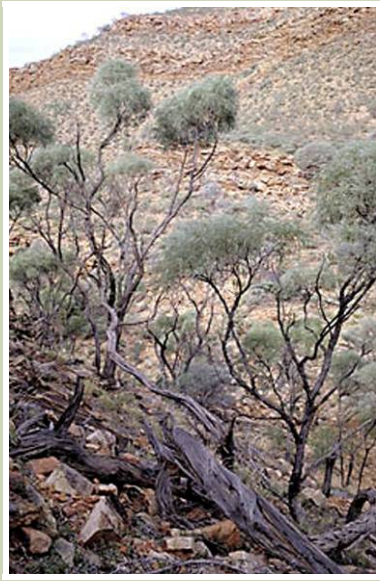


Photo: © NRETA

Northern Territory Status: Vulnerable
Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=350955

Last updated September 2008

Best practice management for Undoolya Wattle in the Northern Territory

- **Maintain tree cover**
- **Manage thickening**
- **Control weeds**
- **Manage fire**

Pink Myrtle

Lithomyrtus linariifolia

What it looks like: Pink Myrtle is a scrambling, wiry shrub. Its long, narrow, dark green leaves are tinged with purple. It has cheerful pink flowers, with five petals, and green fruit.

Where it lives: Pink Myrtle grows in heath or eucalypt woodland on boulders and rubble on shallow soils over sandstone. It is often found along the margins of *Allosyncarpia* rainforest, and almost always grows amongst the spinifex, *Triodia microstachya*. Restricted to the Northern Territory, it is only known to occur in Kakadu National Park and Arnhem Land.

Importance as an indicator: The highly restricted distribution of this species in naturally fire-protected environments suggests fire exclusion is essential for its survival. Pink Myrtle is killed by fire, and may take a few years to produce significant seed crops. Therefore at least three to five years between fires are needed to allow the species to complete its life cyle.

Look after Pink Myrtle and other fire sensitive species by implementing a fire regime that ensures patches of long-unburnt country. To do this, establish a network of fires early in the year, linking with natural fire breaks, such as rivers and roads. Back burn away from areas known to support fire sensitive plants in order to prevent fires building to an intensity that will allow fires to penetrate their habitat.

Photo: © *Kym Brennan*

Northern Territory Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=254179

Last updated September 2008

Best practice management for Pink Myrtle in the Northern Territory

- **Maintain shrub layer**
- **Maintain ground layer**
- **Manage fire**
- **Report new populations**
- **More information is needed about this species**

Palm Valley Myrtle

Thryptomene hexandra

What it looks like: Palm Valley Myrtle is a dense, multi-branched, erect shrub that can grow to 2.5 metres high. It has showy white flowers and grey-green foliage, with narrow leaves arranged in opposite pairs.

Where it lives: In the Northern Territory, Palm Valley Myrtle is known only from Finke Gorge National Park, where it grows in sandstone chasms and on the south-facing slopes of steep ranges. It also grows in western Queensland and New South Wales, where it is found in mulga woodland on stony hillsides or ridges.

Importance as an indicator: As Palm Valley Myrtle is killed by fire, its persistence indicates country that has a well managed fire regime, and has not been overrun by introduced grass that increase fire frequency and intensity.

Look after Palm Valley Myrtle by minimising the risk of severe wildfire in the surrounding vegetation. Ensure fires are neither too frequent nor intense by burning fire breaks when significant ground layer fuel starts to accumulate in order to develop a patchwork of fire ages. Avoid lighting fires close to stands of Palm Valley Myrtle wherever possible. Control infestations of exotic grasses, such as Buffel Grass, in and around stands of Palm Valley Myrtle.

Northern Territory Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=255834

Last updated September 2008

Best practice management for Palm Valley Myrtle in the Northern Territory

- **Maintain shrub layer**
- **Control weeds**
- **Manage fire**

Pternandra

Pternandra coerulescens

What it looks like: Pternandra is a multi-stemmed shrub or tree with smooth, apricot-grey bark. Its glossy green, oval leaves are borne in opposite pairs and have a single distinct vein running along the inside of each margin. Its pale blue to purple flowers are borne in small clusters in the leaf axils, and develop into round yellow-green berries that turn black as they ripen.

Where it lives: Pternandra grows in the rainforests of south-east Asia, New Guinea, and Queensland, and in north-east Arnhem Land. In the Northern Territory, Pternandra has been recorded from spring-fed rainforests and riparian forests, and is elsewhere found along watercourses or wherever ground litter is minimal. It recolonises well in areas disturbed by logging or pig wallowing, and its abundance in West Kalimantan has increased in response to 200 years of shifting cultivation.

Importance as an indicator: As this species thrives in disturbed areas, the most likely limit to its abundance is habitat suitability. The rainforests in which it is found may be sensitive to changes in hydrology caused by unseasonably dry weather, vegetation clearance or water extraction. Although able to resprout after fire, Pternandra may be disadvantaged by frequent and intense fires that destroy the rainforest canopy.

Look after Pternandra by ensuring water extraction considers the potential for lowered water tables to adversely affect rainforests. Back-burn away from rainforest stands early in the dry season or after the first wet season storms to break up the fuel layer and prevent incursions by late dry season fires. Around the rainforest edge, control weeds (such as Mission Grass) that increase fuel loads and fire hazards.

Photo: © Kym Brennan

Northern Territory Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Lawrence D., Suma, V. Mogea, J.P. 2005. Change in species composition with repeated shifting cultivation: Limited role of soil nutrients. Ecological Applications 15, 1952–1967.

Plotkin J.B., Chave J. & Ashton P.S. 2002. Cluster Analysis of Spatial Patterns in Malaysian Tree Species. American Naturalist. 160, 629–644.

Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=254964

Last updated September 2008

Best practice management for Pternandra in the Northern Territory

- **Protect rainforest habitat**
- **Maintain tree cover**
- **Control pest animals**
- **Control weeds**
- **Manage fire**
- **Manage water extraction sustainably**
- **More information is needed about this species**

Dendromyza

Dendromyza reinwardtiana

What it looks like: Dendromyza is a scrambling shrub or vine with glossy green leaves. It has separate male and female flowers, and pink, oval-shaped fruit.

Where it lives: Dendromyza grows in wet conditions in rainforest, where it has been recorded parasitizing Sulatri (*Calophyllum soulattri*) and White Apple (*Syzygium eucalyptoides* subsp. *bleeseri*). While this species is also found on Cape York Peninsula, in Papua New Guinea and in the Indonesian Archipelago, in the Northern Territory, it has been recorded only on the Tiwi Islands.

Importance as an indicator: Persistence of Dendromyza is one indicator of the health of the rainforest in which it lives. The wet conditions it requires are particularly sensitive to changes in hydrology caused by unseasonably dry weather, vegetation clearance or water extraction. Drying out of the rainforest may allow incursions by fire.

Look after Dendromyza by not clearing its habitat. Manage fire in drier vegetation adjoining its rainforest habitat. Back-burn away from rainforest stands early in the dry season or after the first wet season storms to break up the fuel layer and prevent incursions by late dry season fires. Control weeds (such as Mission Grass) that increase fuel loads and fire hazard. Make sure decisions about developments in the catchments consider impacts on groundwater availability.

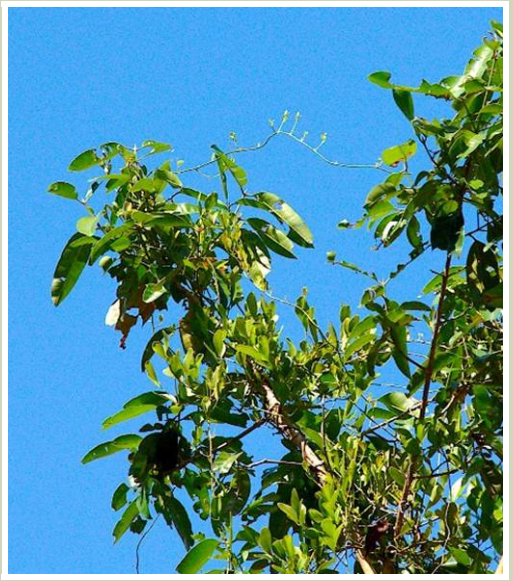


Photo: *© Dave Liddle*

Northern Territory Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=252779

Last updated September 2008

Best practice management for Dendromyza in the Northern Territory

- **Protect rainforest habitat**
- **Maintain tree cover**
- **Manage fire**
- **Manage water extraction sustainably**

Sweet Quandong

Santalum acuminatum

What it looks like: This shrub or small tree has grey bark and weeping yellow-green foliage. Its small pale-green and orange flowers develop into bright red, globular fruit.

Where it lives: Sweet Quandong grows on light soils in dune swales, along creeks, on plains and low rises, and rarely on hills, and is often associated with limestone or sandstone. Along with related species, its is a parasitic plant that grows on the roots of trees and grasses. Sweet Quandongs are found through arid and semi-arid southern Australia. Northern Territory, small populations grow at scattered locations south-west of Alice Springs.

Importance as an indicator: Persistence of Sweet Quandong is dependent on sustainable management practices, particularly the regulation of harvesting, and the control of camels, which selective graze this species. Sweet Quandong is also sensitive to broader-scale management of fire and rabbits. Excessive parasitism of plants by mistletoe may indicate unbalanced environmental conditions.

Look after Sweet Quandong by managing fire and feral animals. Establish a patchwork of recently burnt and long unburnt areas. Control rabbits, which may prevent seedling establishment, and camels, which graze mature plants. Make sure any harvesting is undertaken according to sustainable management planning.

Photo: *© David Albrecht*

Northern Territory Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=347378

Last updated September 2008

Best practice management for Sweet Quandong in the Northern Territory

- **Maintain tree cover**
- **Maintain shrub layer**
- **Control pest animals**
- **Manage fire**
- **Limit harvest to sustainable levels**

Glory of the Centre

Ricinocarpos gloria-medii

What it looks like: Glory of the Centre is a splendid shrub that can grow as tall as 2 metres. Its narrow, grey-green leaves are in-rolled. The leaves and the seed capsule are spangled with star-shaped hairs. Both male and female plants are covered in showy white flowers.

Where it lives: Glory of the Centre grows best in rocky, fire-protected places in deep gullies and well-shaded areas on south facing hillsides. Plants have been known to live for several years, and can resprout after fire, but are replaced by the more vigorous Spinifex (*Triodia*) plants if burnt too often by intense fires. This species is known only from five separate populations in the MacDonnell Ranges Bioregion, in the southern Northern Territory.

Importance as an indicator: Stands of Glory of the Centre indicate a healthy environment in which fire is well managed, and weeds are under control.

Look after Glory of the Centre by managing fire to minimise the risk of severe wildfire entering stands from surrounding vegetation. Develop a patchwork of fire ages by burning fire breaks when significant ground layer fuel starts to accumulate. Control infestations of Buffel Grass in and around known stands, as this introduced grass may increase fire frequency and intensity.

Photo: *© NRETA*

Northern Territory Status: Vulnerable
Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=351445

Last updated September 2008

Best practice management for Glory of the Centre in the Northern Territory

- **Maintain shrub layer**
- **Control weeds**
- **Manage fire**

Sauropus

Sauropus filicinus

What it looks like: *Sauropus filicinus* is a dwarf, somewhat fern-like, shrub. Each branchlet spreads elegantly from its stumpy woody stem, bearing two rows of fleshy, blue-green leaves. Male plants produce clusters of green to pink flowers. The pink to red solitary flowers on female plants develop into pale green globular berries.

Where it lives: This Sauropus grows in cracks in sandstone. Restricted to the Northern Territory, it is only found in Arnhem Land and on nearby Mt Brockman.

Importance as an indicator: The distribution of this species in naturally fire-protected environments suggests fire exclusion may be important for its survival. Although it can resprout after fire, it may take some time to recover its former vigour and produce seed.

Look after Sauropus and other plants of the stone country by implementing a fire regime that ensures patches of long-unburnt country. To do this, establish a network of fires early in the year, linking with natural fire breaks, such as rivers and roads. Avoid burning areas known to support fire sensitive plants.

Photo: *© Kym Brennan*

Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=255153

Last updated September 2008

Best practice management for Sauropus in the Northern Territory

- **Maintain shrub layer**
- **Manage fire**

Steelwood — *Toechima* sp. East Alligator (J.Russell-Smith 8418)

What it looks like: This Steelwood is a small, multi-stemmed, slender branched tree that grows up to 5 metres high. It has smooth, light grey-brown, bark and compound leaves with pairs of alternating leaflets. Its infloresences are composed of separate male and female flowers.

Where it lives: This Steelwood only grows in the Northern Territory, the only known stand being in an *Allosyncarpia* rainforest in a fire-protected sandstone gorge in Arnhem Land, near the Upper East Alligator River. There may be fewer than 50 individuals of this species.

Importance as an indicator: With its restricted distribution and narrow habitat requirements, persistence of this Steelwood species in Arnhem Land will depend of the health of the monsoon thicket in which it grows. Although it is able to resprout from the base if damaged, its current restricted distribution may be fire-related.

Look after Steelwood and other plants of monsoon rainforests by managing fire well. Back-burning around rainforest patches early in the year to reduce fuel hazards will protect these sensitive habitats from periodic fire incursions. However, repeated burning may promote the growth of Annual Sorghum, which increases fire hazard. So try not to burn exactly the same place every year. If necessary, burn after the first wet season storms to control Sorghum and reduce fire hazard.

Photo: *© Martin Armstrong*

Northern Territory Status: Endangered
Australian Status: Endangered

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=257405

Last updated September 2008

Best practice management for Steelwood in the Northern Territory

- **Protect rainforest habitat**
- **Maintain tree cover**
- **Control weeds**
- **Manage fire**
- **Report new populations**

Boronia

Boronia quadrilata

What it looks like: *Boronia quadrilata* is a medium to tall shrub that can grow up to 3 metres tall. It can be erect and slender or bushy and multi-stemmed. The most distinctive features of this plant are the way its crowded leaves project horizontally in alternating, opposite pairs, and its bright green foliage which turns blue-green and waxy with age. Its large, white flowers are borne singly in the leaf axils.

Where it lives: This Boronia grows on sand on the Arnhem Land sandstone plateau, east of Kakadu National Park. It is found nowhere else in the world.

Importance as an indicator: The highly restricted distribution of this species in naturally fire-protected environments suggests fire exclusion is essential for its survival. While adult plants can withstand fire, it may take some time for them to regain their original vigour and reproduce.

Look after Boronia and other fire sensitive species by implementing a fire regime that ensures patches of long-unburnt country. To do this, establish a network of fires early in the year, linking with natural fire breaks, such as rivers and roads. Avoid burning areas known to support fire sensitive plants.

Photo: *© Kym Brennan*

Northern Territory Status: Vulnerable
Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Liddle D.T. and Gibbons A. 2006. National recovery plan for *Boronia quadrilata* and *Boronia viridiflora* in the Northern Territory of Australia. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=251947

Last updated September 2008

Best practice management for Boronia in the Northern Territory

- **Maintain shrub layer**
- **Manage fire**

Boronia

Boronia viridiflora

What it looks like: Shrubs of *Boronia viridiflora* grow outward from vertical rock faces, and can reach up to 2 metres in size. Their red tipped, blue-green leaves are widely spaced in opposite pairs along long elegant stems, and their white flowers are borne singly in the leaf axils.

Where it lives: *Boronia viridiflora* grows from vertical surfaces of cliffs or boulders on the Arnhem Land sandstone plateau, east of Kakadu National Park. It is found nowhere else in the world.

Importance as an indicator: The highly restricted distribution of this species in naturally fire-protected environments suggests fire exclusion is essential for its survival.

Look after Boronia and other fire sensitive species by implementing a fire regime that ensures patches of long-unburnt country. To do this, establish a network of fires early in the year, linking with natural fire breaks, such as rivers and roads. Avoid burning areas known to support fire sensitive plants.

Photo: *© Kym Brennan*

Northern Territory Status: Vulnerable
Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Liddle D.T. and Gibbons A. 2006. National recovery plan for *Boronia quadrilata* and *Boronia viridiflora* in the Northern Territory of Australia. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=251992

Last updated September 2008

Best practice management for Boronia in the Northern Territory

- **Maintain shrub layer**
- **Manage fire**

Desert Flannel Flower

Actinotus schwarzii

What it looks like: The Desert Flannel Flower is a small, erect daisy bush. It has showy white flower heads, with pale yellow centres. Soft, densely-woolly down covers its chrysanthemum-like leaves and stems, and its fruits are covered in silky hairs.

Where it lives: Desert Flannel Flower has only been recorded from six locations in the Chewings and Heavitree Ranges in the West MacDonnell Ranges. Its favoured habitat, sheltered gorges and steep south-facing precipices, also occurs in the Petermann Ranges, where the species may be found one day.

Importance as an indicator: The abundance of this species probably reflects availability of suitable habitat, rather than adequacy of management. However, fire management has been recommended as a management action.

Look after Desert Flannel Flower by observing any changes in abundance that might indicate a decline in the species. Look out for any signs that this attractive species is being harvested for its flowers or seeds. Develop a patchy fire regime that ensures several years between fires. Limit fire intensity by burning fire breaks when significant ground layer fuel starts to accumulate. If there is evidence of trampling or grazing, consider fencing significant stands of this species to exclude grazing animals, especially rabbits.

Photo: © NRETA

Northern Territory Status: Vulnerable
Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Nano, C. and Pavey, C. 2007. National Recovery Plan for *Olearia macdonnellensis*, *Minuria tridens* (Minnie Daisy) and *Actinotus schwarzii* (Desert Flannel Flower). Department of Natural Resources, Environment and the Arts, Northern Territory.

Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=350965

Last updated September 2008

Best practice management for Desert Flannel Flower in the Northern Territory

- **Maintain shrub layer**
- **Maintain ground layer**
- **Control pest animals**
- **Fence key habitat**
- **Manage fire**
- **Do not collect from the wild**

Platysace

Platysace saxatilis

What it looks like: Platysace is a multi-stemmed shrub that can grow up to one and a half metres tall. It has long, narrow fragrant leaves and large clusters of white flowers, which produce fennel-like seeds.

Where it lives: This recently-described species grows in sand on sandstone cliff faces. It is found only in the Victoria Boneparte bioregion, in a small area that straddles the Northern Territory – Western Australia border. In the Northern Territory, it grows in Keep River National Park. It is thought that there are fewer than 1000 individuals of this species.

Importance as an indicator: The distribution of Platysace in naturally fire-protected environments suggests fire exclusion may be important for its survival. However, the fire response of this species has not been recorded.

Look after Platysace by implementing a fire regime that ensures patches of long-unburnt country. To do this, establish a network of fires early in the year, linking with natural fire breaks, such as rivers and roads. Avoid burning areas known to support fire sensitive plants. Light fires only under mild weather conditions, when their extent can be controlled.

Photo: *© Martin Armstrong*

Northern Territory Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=180700

Last updated September 2008

Best practice management for Platysace in the Northern Territory

- **Maintain shrub layer**
- **Manage fire**

Tiwi Islands Waxflower

Hoya australis subsp. *oramicola*

What it looks like: Tiwi Islands Waxflower is a scrambling vine with dark rubbery, in-rolled leaves and fragrant clusters of white, succulent flowers. When damaged, the stems and leaves exude a white latex sap.

Where it lives: This Waxflower is a plant of coastal monsoon rainforests, where it may trail along the ground for some distance before finding its way to the canopy. It is only known to occur at a few locations on the Tiwi Islands.

Importance as an indicator: Persistence of Tiwi Islands Waxflower indicates low levels of disturbance by fire and feral animals in the monsoon rainforests in which it grows. These rainforests are sensitive to changes in hydrology caused by unseasonably dry weather, vegetation clearance or water extraction. Drying out of the rainforest may also allow incursions by fire.

Look after Tiwi Islands Waxflower and other plants of monsoon rainforests by protecting rainforest stands from clearance and disturbance. Manage fire in drier vegetation adjoining its rainforest habitat. Back-burn away from rainforest stands early in the dry season or after the first wet season storms to break up the fuel layer and prevent incursions by late dry season fires. Control weeds (such as Mission Grass) that increase fuel loads and fire hazards. Control pigs that dig around the bases of plants looking for food, and buffalo, whose trampling is particularly destructive to fragile ground layer plants. Make sure decisions about developments in the catchment consider impacts on groundwater availability.

Photo: *© Kym Brennan*

Northern Territory Status: Vulnerable
Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=253852

Last updated September 2008

Best practice management for Tiwi Islands Waxflower in the Northern Territory

- **Do not clear habitat**
- **Protect rainforest habitat**
- **Maintain tree cover**
- **Control pest animals**
- **Control weeds**
- **Manage fire**
- **Manage water extraction sustainably**

Thorny Solanum

Solanum carduiforme

What it looks like: This Thorny Solanum is a spreading spiny, herbaceous shrub that can grow as tall as one metre high. It has grey-green, velvety leaves that are deeply lobed. Plants can reproduce either by seed or vegetatively from underground rhizomes. Male plants produce inflorescences with many purple flowers, while the purple flowers on female plants are solitary. This species can be confused with several other similar species of Solanum.

Where it lives: Thorny Solanum grows in rocky and sandy areas, mainly on sandstone, but also on conglomerate rocks. Though found at a few locations between the Kimberley region of Western Australia and the Einasleigh Uplands in Queensland, the species is nowhere common. Thorny Solanum seems to withstand disturbance. It is sometimes the only shrub left in heavily-trampled areas close to waterpoints, as its dense covering of thorns make it difficult to graze.

Importance as an indicator: The presence of this species is probably more indicative of substrate than of management. If this Thorny Solanum behaves like closely-related species, adult plants are probably killed by fire, but subsequent germination is prolific. The plant establishes well following either fire or mechanical disturbance, such as the scrape of a grader.

Look after Thorny Solanum by implementing a fire regime that ensures patches are regularly burnt to promote seed germination, but allows plants to mature and replace the soil seed bank. This suggests patches should be burnt every second or third year in areas where there are no other forms of disturbance. Thorny Solanum may tolerate overgrazing and trampling, but this is not a recommended practice for this or any other species.

Photo: *© Keith McDonald*

Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Bean, A.R. 2004. The taxonomy and ecology of Solanum subg. Leptostemonum (Dunal) Bitter (Solanaceae) in Queensland and far north-eastern New South Wales, Australia. Austrobaileya, 6, 639-816. Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin. Keith McDonald. 2008. Personal communications.

www.landmanager.org.au/view/index.aspx?id=255270

Last updated September 2008

Best practice management for Thorny Solanum in the Northern Territory

- **Maintain shrub layer**
- **Graze moderately & wet season spell**
- **Manage fire**
- **Report new populations**
- **More information is needed about this species**

Giant Sweet Potato

Ipomoea polpha subsp. *latzii*

What it looks like: Giant Sweet Potato is a low scrambling plant with dull green leaves and pink trumpet flowers. The plant grows from a perennial rootstock, with a mound of soil and leaf litter developing at the base of older plants. Its common name comes from its large root tubers that are harvested as bush tucker.

Where it lives: Giant Sweet Potato grows in run-on areas at the base of rocky slopes, where Mulga (*Acacia aneura*) dominates the sparse canopy, or in adjacent Spinifex (*Triodia*) grasslands. Its abundance probably fluctuates in response to rainfall. The only known population of this subspecies is near Ti Tree, about 200 km northeast of Alice Springs.

Importance as an indicator: The restricted distribution of Giant Sweet Potato probably reflects limited habitat availability rather than land management practices. Plants can resprout after fire, but long-term impacts of fire is not known, and it is possible plants will be weakened by frequent fires. While the species persists under low to moderate grazing pressure, it may be adversely affected by heavier stocking rates.

Look after Giant Sweet Potato by observing any changes in abundance that might indicate a decline in the species, particularly in areas where it is harvested for food. Develop a patchy fire regime that ensures several years between fires. Limit fire intensity by burning fire breaks when significant ground layer fuel starts to accumulate. If there is evidence of trampling or grazing, consider fencing significant stands of this species to exclude grazing animals.

Photo: *© David Albrecht*

Northern Territory Status: Vulnerable
Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=449068

Last updated September 2008

Best practice management for Giant Sweet Potato in the Northern Territory

- **Maintain ground layer**
- **Graze moderately & periodically spell country from grazing**
- **Fence key habitat**
- **Manage fire**
- **Limit harvest to sustainable levels**
- **Report new populations**
- **More information is needed about this species**

Wrixonia Mintbush

Wrixonia schultzii

What it looks like: Wrixonia Mintbush is a shrub that can grow to one and a half metres tall. It has round leaves with short stalks and thickened margins. Its stalkless flowers are white with purple spots and yellow patches on the centre of the lower lip.

Where it lives: Wrixonia Mintbush grows in shady locations on shallow soils. It is found on the upper slopes and tops of quartzite mountains and ranges, particularly on southerly aspects. It occurs only in the Northern Territory, where it is confined to Chewings Range, Mt Sonder and Mt Edward in the MacDonnell Ranges Bioregion.

Importance as an indicator: Persistence of Wrixonia Mintbush indicates a healthy environment in which fire is well managed, and weeds are under control.

Look after Wrixonia Mintbush by managing fire to minimise the risk of severe wildfire entering stands from surrounding vegetation. Develop a patchwork of fire ages by burning fire breaks when significant ground layer fuel starts to accumulate. Control infestations of Buffel Grass in and around stands of Wrixonia Mintbush, as this introduced grass may increase fire frequency and intensity.

Photo: *© Jenni Low Choy*

Northern Territory Status: Vulnerable
Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=351595

Last updated September 2008

Best practice management for Wrixonia Mintbush in the Northern Territory

- **Maintain shrub layer**
- **Control weeds**
- **Manage fire**
- **Report new populations**

Valley Emubush

Eremophila sp. Rainbow Valley (T.S.Henshall 1181)

What it looks like: Valley Emubush is a low, spreading shrub, with blue-grey foliage. It produces purple and white flowers on stems that trail along the ground, and round berries.

Where it lives: Valley Emubush grows in run-on areas of sandplains and the lower slopes of low spinifex-dominated sand dunes. This species is restricted to a small area of the Northern Territory arid zone.

Importance as an indicator: The restricted distribution of this species probably reflects limited suitable habitat, rather than management. However, most plants in spinifex-dominated areas of the arid zone are influenced by fire management.

Look after Valley Emubush and maintain plant diversity in the arid zone by introducing a fire regime that ensures a mosaic of habitats burnt at different times, with no areas being burnt more frequently than every three to five years. To do this, some areas will need to be burnt most years in order to create breaks in the fuel load. Fires should only be lit under mild weather conditions, when extent of burn can be controlled.

Northern Territory Status: Vulnerable
Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=351155

Last updated September 2008

Best practice management for Valley Emubush in the Northern Territory

- **Maintain shrub layer**
- **Manage fire**

Bladderwort *Utricularia dunstaniae*

What it looks like: This small Bladderwort is an annual plant that flowers in the middle of the wet season and dies after it produces seed. Its single, flesh-coloured flower resembles an insect with long antennae that protrude from its lower lip.

Where it lives: This Bladderwort grows in particularly wet sand, often in shallow water, in Paperbark (*Melaleuca nervosa*) woodland or Feather-flower (*Verticordia*) shrubland. In the Northern Territory, it is known from a few records in the region between Jabiru and the Howard River. It also grows in the Kimberley, Western Australia.

Importance as an indicator: With its narrow habitat requirements, persistence of this Bladderwort will depend on good environmental management. It will be particularly sensitive to any changes in water flow or salinity, and to disturbance caused by buffalo, cattle and pigs or trail bikes. It could also be adversely affected by weed invasion or altered fire regimes.

Look after Bladderwort by protecting its habitat from vegetation clearance and disturbance. Any development proposals in the region should consider the possible presence of this Bladderwort, which is most unlikely to survive sand mining or rural subdivision. Water extraction should also be avoided if it adversely affects the hydrology of the environment in which this threatened species if found. Control weeds that flourish in floodplain environments, especially Prickly Mimosa (*Mimosa pigra*) and Para Grass (*Urochloa mutica*). Eradicate any feral buffalo or cattle, and keep pig numbers under control. The vegetation of these floodplains may benefit from reinstating traditional methods of progressively burning patches as the waters recede and the soils dry out.

Photo: *© Kym Brennan & A. Hope*

Northern Territory Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=256111

Last updated September 2008

Best practice management for Bladderwort in the Northern Territory

- **Do not clear habitat**
- **Maintain ground layer**
- **Control pest animals**
- **Control weeds**
- **Manage fire**
- **Manage water extraction sustainably**
- **Protect wetland habitat**

Bladderwort *Utricularia singeriana*

What it looks like: This Bladderwort bears single stunning, purple, mauve or violet flowers on erect leafless stems. This species is believed to be an annual plant, dying after it produces seed towards the end of the wet season.

Where it lives: The species grows on wet sandy flats and swamps with short grasses and sedges. The few Northern Territory records of this species are all from wetlands between Katherine and Darwin. It also grows in the Kimberley, Western Australia.

Importance as an indicator: With its narrow habitat requirements and restricted distribution, persistence of this Bladderwort will depend on good environmental management. It will be particularly sensitive to any changes in water flow or salinity, and to disturbance caused by buffalo, cattle and pigs or trail bikes. It could also be adversely affected by weed invasion or altered fire regimes.

Look after Bladderwort by protecting its habitat from vegetation clearance and disturbance. Any development proposals in the region should consider the possible presence of this Bladderwort, which is most unlikely to survive sand mining or rural subdivision. Water extraction should also be avoided if it adversely affects the hydrology of the environment in which this threatened species if found. Control weeds that flourish in floodplain environments, especially Prickly Mimosa (*Mimosa pigra*) and Para Grass (*Urochloa mutica*). Eradicate any feral buffalo or cattle, and keep pig numbers under control. The vegetation of these floodplains may benefit from reinstating traditional methods of progressively burning patches as the waters recede and the soils dry out.

Photo: *© Kym Brennan*

Northern Territory Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=256156

Last updated September 2008

Best practice management for Bladderwort in the Northern Territory

- **Do not clear habitat**
- **Maintain ground layer**
- **Control pest animals**
- **Control weeds**
- **Manage fire**
- **Manage water extraction sustainably**
- **Protect wetland habitat**

Goodenia

Goodenia quadrifida

What it looks like: This Goodenia is a spindly, annual herb that is covered in short glandular tipped hairs. It has long, narrow, widely spaced leaves may be three-lobed. Its purple-brown flowers are two-lipped, with two upper petals and three lower petals, and have a yellow throat.

Where it lives: This species of Goodenia has been recorded in grassland in poorly drained soils, in the upper reaches of estuarine floodplains. Restricted to the Northern Territory, it is known only from three places between Marrakai Crossing, on the Adelaide River, and the Mary River catchment.

Importance as an indicator: With its restricted distribution and narrow habitat requirements, persistence of Goodenia will be a litmus test of good environmental management. Maintaining habitat suitability for this species will be an increasing challenge, threatened as it is by Prickly Mimosa, buffalo and cattle grazing, wallowing and rooting by pigs, saltwater intrusion and altered fire regimes.

Look after Goodenia by ridding its present and potential habitat of Prickly Mimosa, and keeping feral buffalo and cattle numbers under control. Avoid activities that accelerate saltwater intrusion. The vegetation of the floodplains may also benefit from reinstating traditional methods of progressively burning patches as the waters recede and the soils dry out.

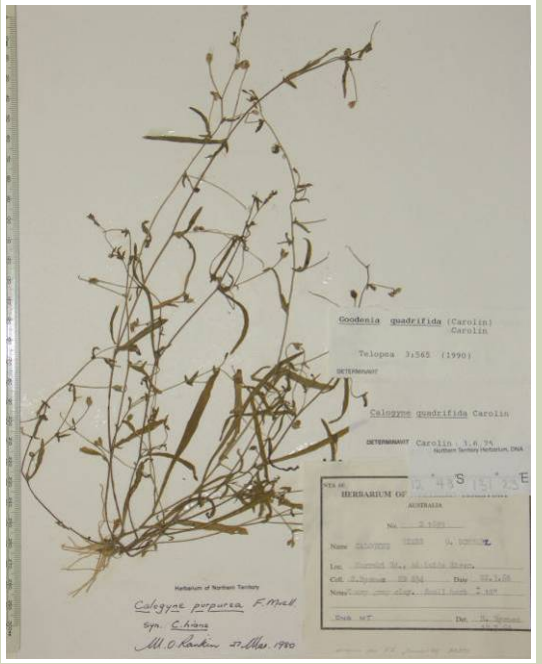


Photo: © Ian Cowie

Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=253531

Last updated September 2008

Best practice management for Goodenia in the Northern Territory

- **Maintain ground layer**
- **Control pest animals**
- **Control weeds**
- **Manage fire**
- **Protect wetland habitat**

Tarennoidea

Tarennoidea wallichii

What it looks like: Tarennoidea is a small rainforest tree that can grow to 5 metres tall. It has smooth grey bark. Its glossy, dark green leaves are borne in opposite pairs, joined across the stem by an interpetiolar stipule. Domatia, or small glands fringed with short hairs, occur along the midrib on the underside of the leaf. Its clustered white flowers develop into round green fruit.

Where it lives: This species is widespread between India and Burma. In Australia, it is known only from the western side of Melville Island, where it grows in the drier parts of complex evergreen monsoon rainforests.

Importance as an indicator: Long term persistence of Tarennoidea is one indicator of the health of the rainforest in which this species lives. Its maintenance depends upon the retention of the Tiwi rainforest network and control of the impact of feral animals. Moderately fire-tolerant, it is likely to be eliminated by frequent fire. However, its small distribution also makes it sensitive to chance climatic events such as cyclones that destroy the tree canopy.

Look after Tarennoidea by protecting rainforest stands from clearance and disturbance. Manage fire in drier vegetation adjoining its rainforest habitat. Back-burn away from rainforest stands early in the dry season or after the first wet season storms to break up the fuel layer and prevent incursions by late dry season fires. Control weeds (such as Mission Grass) that increase fuel loads and fire hazards. Control pigs and other feral animals with effective methods, such as baits and traps.

Photo: *© Kym Brennan*

Northern Territory Status: Endangered

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=255698

Last updated September 2008

Best practice management for Tarennoidea in the Northern Territory

- **Do not clear habitat**
- **Protect rainforest habitat**
- **Maintain tree cover**
- **Control pest animals**
- **Control weeds**
- **Manage fire**

Minnie Daisy

Minuria tridens

What it looks like: This Minnie Daisy is a small, perennial bush with soft white stems and divided, grey-green leaves. Its flower heads are lilac with a yellow centre.

Where it lives: This Minnie Daisy grows in shrublands on the south-facing slopes of alkaline sandstone hills, rises and ranges. Except for a single record from Western Australia, the few known occurrences of this species are in arid Northern Territory.

Importance as an indicator: With its limited distribution, this species is sensitive to land management. Buffel Grass is believed to have a negative impact on it through competition and altered fire regimes. Although the species can resprout from the base after fire, it may take several years to recover its former vigour and produce seeds. Several years are needed between fires to allow it to complete its life-cycle.

Look after Minnie Daisy by developing a patchy fire regime that ensures several years between fires. Limit fire intensity by burning fire breaks when significant ground layer fuel starts to accumulate. Control Buffel Grass, which both out-competes the daisy, and increases fire hazard.

Photo: © NRETA

Northern Territory Status: Vulnerable
Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Nano, C. and Pavey, C. 2007. National Recovery Plan for *Olearia macdonnellensis*, *Minuria tridens* (Minnie Daisy) and *Actinotus schwarzii* (Desert Flannel Flower). Department of Natural Resources, Environment and the Arts, Northern Territory.

Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=351375

Last updated September 2008

Best practice management for Minnie Daisy in the Northern Territory

- **Do not clear habitat**
- **Maintain shrub layer**
- **Control weeds**
- **Manage fire**

Daisy-Bush *Olearia macdonnellensis*

What it looks like: This Daisy-Bush is an aromatic shrub that can grow to over 1 metre high, and has sticky green leaves. Its flower heads are white with a yellow centre.

Where it lives: This Daisy-Bush grows in gullies, along drainage lines and at the base of rocky slopes, where Victoria Spring Mallee (*Eucalyptus trivalvis*) and/or Mulga (*Acacia aneura*) dominate the sparse canopy. This habitat consistently has some natural protection from wildfires, and contains other fire-sensitive plants. The species is known only from a small area in the MacDonnell Ranges Bioregion of the Northern Territory, where there are several separate stands.

Importance as an indicator: With its limited distribution, this species is dependent on good land management. Buffel Grass is believed to have a negative impact on it through competition and altered fire regimes. Killed by fire, this species takes at lease four years to produce seed. Several years are therefore needed between fires to allow it to complete its life-cycle.

Look after Daisy-Bush by developing a patchy fire regime that ensures several years between fires. Limit fire intensity by burning fire breaks when significant ground layer fuel starts to accumulate. Control Buffel Grass, which both out-competes the Daisy-bush, and increases fire hazard.

Photo: © *NRETA*

Northern Territory Status: Vulnerable
Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Nano, C. and Pavey, C. 2007. National Recovery Plan for *Olearia macdonnellensis*, *Minuria tridens* (Minnie Daisy) and *Actinotus schwarzii* (Desert Flannel Flower). Department of Natural Resources, Environment and the Arts, Northern Territory.

Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. Lost from our Landscape - Threatened Species of the Northern Territory. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=351415

Last updated September 2008

Best practice management for Daisy-Bush in the Northern Territory

- **Maintain shrub layer**
- **Control weeds**
- **Manage fire**

Australian Sugar Palm

Arenga australasica

What it looks like: Australian Sugar Palm is a multi-stemmed palm that can grow up to 16 metres tall, and produces new suckers from the base of existing plants. Its 5 metre fronds have long strappy, pale green leaflets. It produces weeping clusters of fleshy pink fruit.

Where it lives: Australian Sugar Palms grow in sandy situations where there is a good supply of moisture and protection from fire. In the Northern Territory, they are known from between Cobourg Peninsula and the Queensland border, where they grow scattered through coastal monsoon forest thickets and in sandstone gorges. They are also found in coastal rainforests of Far North Queensland.

Importance as an indicator: Persistence of the Australian Sugar Palm in the Northern Territory is a positive indicator of the health of the monsoon forests in which it occurs. The wet conditions it requires are particularly sensitive to changes in hydrology caused by unseasonably dry weather or water extraction. Drying out of the rainforest may allow incursions by fire.

Look after Australian Sugar Palm and other rainforest plants by managing fire well. Back-burning around rainforest patches early in the year to reduce fuel hazards will protect these sensitive habitats from periodic fire incursions. However, repeated burning may promote the growth of Annual Sorghum, which increases fire hazard. So try not to burn exactly the same place every year. If necessary, burn after the first wet season storms to control Sorghum and reduce fire hazard. Control pigs that eat fallen fruits and dig around the bases of palms while looking for food. Make sure decisions about developments in the catchments consider impacts on groundwater availability.

Photo: *© Kym Brennan*

Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Russell-Smith J., Ryan P.G., Klessa D., Waight G. & Harwood R. 1998. Fire regimes, fire-sensitive vegetation and fire management of the sandstone Arnhem Plateau, monsoonal northern Australia. *Journal of Applied Ecology* 35, 829-846.

Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=251703

Last updated September 2008

Best practice management for Australian Sugar Palm in the Northern Territory

- **Protect rainforest habitat**
- **Maintain tree cover**
- **Control pest animals**
- **Manage fire**
- **Manage water extraction sustainably**

Central Australian Cabbage Palm

Livistona mariae subsp. *mariae*

What it looks like: The Central Australian Cabbage Palm is a long-lived palm that can grow to 25 metres tall. Its massive, green fronds leave a shaggy base when they are shed, but these are soon stripped away to leave a dull grey, ringed trunk.

Where it lives: Central Australian Cabbage Palms grow on valley floors of intermittent streams, where they have reliable access to ground water. The species is found only in Palm Valley, where the Finke River cuts through the MacDonnell Ranges, and at nearby Running Waters.

Importance as an indicator: The limited distribution of this species reflects the restricted availability of shallow ground water along arid zone water courses. Central Australian Cabbage Palm will be sensitive to any lowering of ground water as a result of unsustainable water extraction or desertification. It is also unlikely to tolerate soil or root disturbance. Although individual plants may resprout after fire, stands of this palm could be degraded by frequent or intense fire.

Look after Central Australian Cabbage Palm by ensuring any water extraction considers the impact on this species. Manage disturbance caused by livestock, feral animals and tourists, fencing off areas where necessary. Minimise fire hazard, especially that posed by introduced Couch Grass (*Cynodon dactylon*).

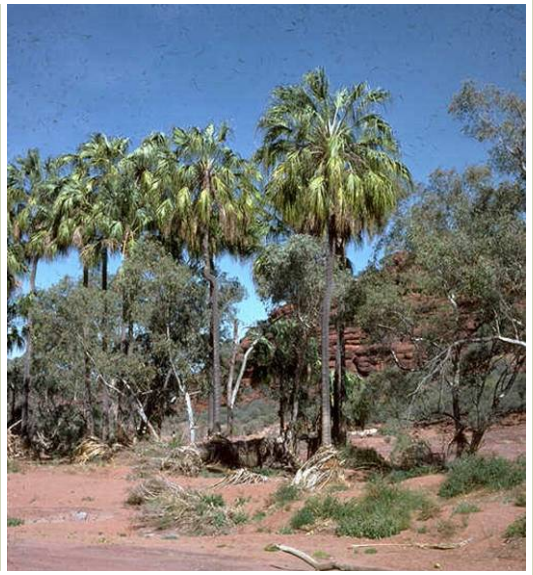


Photo: © NRETA

Northern Territory Status: Vulnerable
Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=351305

Last updated September 2008

Best practice management for Central Australian Cabbage Palm in the Northern Territory

- **Maintain tree cover**
- **Control pest animals**
- **Control weeds**
- **Fence key habitat**
- **Manage fire**
- **Manage water extraction sustainably**
- **Minimise tourist impact**

Darwin Palm

Ptychosperma macarthurii

What it looks like: Darwin Palm, also known as MacArthur Palm, is a slender multi-stemmed plant of the rainforest understorey. Its bright green fronds have numerous opposite pairs of long, simple leaflets. It produces large, cascading clusters of bright red fruit.

Where it lives: Darwin Palms grow in shady rainforests on damp loamy soils associated with lowland springs near the margins of riverine floodplains. Also present on Cape York Peninsula and in Papua New Guinea, in the Northern Territory, they are known from only eight populations close to Darwin. In Queensland, they are said to thrive in canopy gaps.

Importance as an indicator: Persistence of Darwin Palms indicates intact rainforest with limited disturbance by grazing animals or weeds, and a well-managed fire regime. The wet conditions it requires are particularly sensitive to changes in hydrology caused by unseasonably dry weather, vegetation clearance or water extraction. Feral pigs are also attracted to wet areas in rainforests, where they dig up the soil looking for roots and tubers, and prevent the recruitment of new rainforest plants.

Look after Darwin Palm by protecting rainforest stands from clearance and disturbance. Manage fire in drier vegetation adjoining its rainforest habitat. Back-burn away from rainforest stands early in the dry season or after the first wet season storms to break up the fuel layer and prevent incursions by late dry season fires. Control weeds (such as Gamba Grass and Mission Grass) that increase fuel loads and fire hazards. Make sure decisions about developments in the catchments consider impacts on groundwater availability. Control pigs, which disturb rainforest soils, and may graze and dig out the low shoots.

Photo: © Dave Liddle

Northern Territory Status: Endangered
Australian Status: Endangered

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=255027

Last updated September 2008

Best practice management for Darwin Palm in the Northern Territory

- **Protect rainforest habitat**
- **Maintain tree cover**
- **Maintain shrub layer**
- **Control pest animals**
- **Control weeds**
- **Fence key habitat**
- **Manage fire**
- **Manage water extraction sustainably**

Narrow-leaf Climbing Pandan

Freycinetia excelsa

What it looks like: Narrow-leaf Climbing Pandan is a branching, woody climber that attaches to trees with roots produced along its stems. It has long, fine prickly leaves, produces yellow male and white female flowers in separate spikes and has strawberry-red cone-like fruits.

Where it lives: Narrow-leaf Climbing Pandan grows in wet lowland rainforest and spring-fed rainforests in sandstone gullies. It is known from a only a few Top End localities between Bathurst Island and the Arafura Swamp. It also grows in Papua New Guinea and eastern Australia, as far south as northern New South Wales.

Importance as an indicator: Persistence of Narrow-leaf Climbing Pandan is dependent on the rainforest in which it lives. The wet conditions it requires are particularly sensitive to changes in hydrology caused by unseasonably dry weather, vegetation clearance or water extraction. Feral pigs are also attracted to wet areas in rainforests, where they dig up the soil looking for roots and tubers. As Narrow-leaf Climbing Pandan is killed by fire, its presence at the edges of rainforest patches also indicates good fire management.

Look after Narrow-leaf Climbing Pandan by controlling pigs with baits and/or traps. Make sure decisions about developments in the catchments consider impacts on groundwater availability. Manage fire in the surrounding woodlands. Back-burning around rainforest patches early in the year or after the first wet season storms to reduce fuel hazards will protect these sensitive habitats from periodic fire incursions.

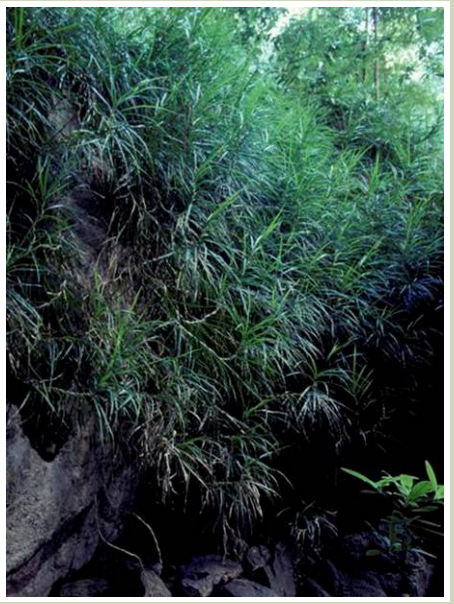


Photo: *© Kym Brennan*

Northern Territory Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=351165

Last updated September 2008

Best practice management for Narrow-leaf Climbing Pandan in the Northern Territory

- **Do not clear habitat**
- **Protect rainforest habitat**
- **Maintain tree cover**
- **Control pest animals**
- **Manage fire**
- **Manage water extraction sustainably**

Climbing Pandan

Freycinetia percostata

What it looks like: Climbing Pandan is a large woody climber. Its strappy, sharply-toothed leaves can be as long as 80 cm. It produces brownish male and orange to pink female flowers in separate spikes, and tight, cone-like crimson fruit.

Where it lives: Climbing Pandan grows in wet lowland rainforest and spring-fed rainforests in sandstone gullies. Also found in Queensland, New Guinea and the Solomon Islands, in the Northern Territory, it is known from the region between Bathurst Island and the Arafura Swamp.

Importance as an indicator: Persistence of Climbing Pandan is dependent on the rainforest in which it lives. The wet conditions it requires are particularly sensitive to changes in hydrology caused by unseasonably dry weather, vegetation clearance or water extraction. Feral pigs are also attracted to wet areas in rainforests, where they dig up the soil looking for roots and tubers. As Climbing Pandan is killed by fire, its presence at the edges of rainforest patches also indicates good fire management.

Look after Climbing Pandan by controlling pigs with baits and traps. Make sure decisions about developments in the catchments consider impacts on groundwater availability. Manage fire in the surrounding woodlands. Back-burning around rainforest patches early in the year or after the first wet season storms to reduce fuel hazards will protect these sensitive habitats from periodic fire incursions.

Photo: *© Martin Armstrong*

Northern Territory Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=253405

Last updated September 2008

Best practice management for Climbing Pandan in the Northern Territory

- **Protect rainforest habitat**
- **Maintain tree cover**
- **Control pest animals**
- **Manage fire**
- **Manage water extraction sustainably**

Typhonium

Typhonium jonesii

What it looks like: This Typhonium is an arum lily-like plant that dies back to an underground tuber in the dry season. It has long spear-shaped leaves and pale mauve-cream flowers. It is likely that these have an unpleasant smell for attracting insect pollinators.

Where it lives: Only found in the Northern Territory, this species has been recorded from a few localities on the Tiwi Islands, where it grows on rocky or lateritic hills. Two of these sites were in woodlands dominated by Darwin Woollybutt (*Eucalyptus miniata*) and Darwin Stringybark (*Eucalyptus tetrodonta*) woodlands. There are thought to be no more than 300 individuals of this species.

Importance as an indicator: With its restricted distribution and narrow habitat requirements, persistence of this Typhonium will be a litmus test of good environmental management. Clearing of habitat for plantation forestry development is a potential threat for this species. It may also be affected by feral buffalo, cattle and horses; and increased clearing, road development and activity may increase the invasion of exotic plants.

Look after Typhonium by protecting its habitat from vegetation clearance, disturbance and weed invasion. Any proposed developments should consider the likelihood of Typhonium being present in the area. Feral animals that dig or trample the soil or ground layer should be managed. In particular, pigs, buffalo, cattle and horses should be controlled. Weeds with the potential to replace ground layer plants, especially exotic grasses, should also be excluded from the area through good weed hygiene and fire management practices.

Photo: *© Martin Armstrong*

Northern Territory Status: Endangered
Australian Status: Endangered

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=256068

Last updated September 2008

Best practice management for Typhonium in the Northern Territory

- **Do not clear habitat**
- **Maintain tree cover**
- **Maintain ground layer**
- **Control pest animals**
- **Control weeds**
- **Report new populations**
- **More information is needed about this species**

Typhonium

Typhonium mirabile

What it looks like: This Typhonium is a small arum lily-like plant that dies back to an underground tuber in the dry season. Its dark blue-green, heart-shaped leaves lie on or just above the soil surface. Like most Typhoniums, its flowers are probably strongly smelling to attract insect pollinators.

Where it lives: This Typhonium is restricted to the Northern Territory, where it is only known to grow on the western side of Melville Island, with an estimated population size of about 200 plants. Even there, it has a sporadic occurrence, growing mainly in patches of bare ground or sparse leaf litter in eucalypt woodland on hill slopes and ridges.

Importance as an indicator: With its restricted distribution and narrow habitat requirements, persistence of this Typhonium will be a litmus test of good environmental management, particularly of the condition of the ground layer. The species is unlikely to survive clearance or soil disturbance.

Look after Typhonium by protecting its habitat from clearance and disturbance. Feral animals that dig or trample the soil or ground layer should be managed. In particular, pigs, buffalo, cattle and horses should be controlled. Weeds with the potential to replace ground layer plants, especially exotic grasses, should also be excluded from the area through good weed hygiene and fire management practices. Manage fire to avoid burning actively growing plants.

Photo: *© Kym Brennan*

Northern Territory Status: Endangered
Australian Status: Endangered

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=256077

Last updated September 2008

Best practice management for Typhonium in the Northern Territory

- **Do not clear habitat**
- **Protect rainforest habitat**
- **Maintain ground layer**
- **Control pest animals**
- **Control weeds**
- **Manage fire**
- **Report new populations**
- **More information is needed about this species**

Typhonium

Typhonium taylori

What it looks like: This Typhonium is a small arum lily-like plant that dies back to an underground tuber in the dry season. In most Typhoniums, the flowers are strongly smelling to attract insect pollinators.

Where it lives: This Typhonium is restricted to the Northern Territory, where it has been recorded at a single location on the edge of the Howard River floodplain, where there are thought to be fewer than 100 individual plants. There it grows in seasonally saturated sandy soil, in a nutrient poor grass/sedgeland community with scattered Broad-leaved Paperbarks (*Melaleuca viridiflora*).

Importance as an indicator: With its restricted distribution and narrow habitat requirements, persistence of this Typhonium will be a litmus test of good environmental management. It will be particularly sensitive to any changes in water flow or salinity, and to disturbance caused by buffalo, cattle and pigs. It could also be adversely affected by weed invasion or altered fire regimes.

Look after Typhonium by protecting its habitat from vegetation clearance and disturbance. Any development proposals in the region should consider the possible presence of Typhonium, which is most unlikely to survive sand mining or rural subdivision. Water extraction should also be avoided if it adversely affects the hydrology of the environment in which this threatened species is found. Control weeds that flourish in floodplain environments, especially Prickly Mimosa (*Mimosa pigra*) and Para Grass (*Urochloa mutica*). Eradicate any feral buffalo or cattle, and keep pig numbers under control. The vegetation of these floodplains may benefit from reinstating traditional methods of progressively burning patches as the waters recede and the soils dry out.

Photo: *© Raelee Kerrigan*

Northern Territory Status: Endangered
Australian Status: Endangered

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=256102

Last updated September 2008

Best practice management for Typhonium in the Northern Territory

- **Do not clear habitat**
- **Protect rainforest habitat**
- **Maintain ground layer**
- **Control pest animals**
- **Control weeds**
- **Manage fire**
- **Manage water extraction sustainably**
- **Protect wetland habitat**
- **Report new populations**
- **More information is needed about this species**

Swamp Twig-Rush

Baumea arthrophylla

What it looks like: Swamp Twig-Rush is a perennial sedge that can grow up to 2 metres tall. Its stems are hollow and tubular. Its leaves are also tubular, their insides pithy and divided by partitions. Its inflorescence is a spike that produces several clusters of brown nutlets that can be dispersed by waterbirds. However the production of new shoots from a long underground rhizome is probably the more important form of reproduction in this species.

Where it lives: Swamp Twig-Rush grows in swamps and lake shallows in New Zealand, New Caledonia, New Hebrides, New Guinea and sub-tropical and temperate Australia. In the Northern Territory, it is known only from a few plants in Watarrka National Park.

Importance as an indicator: Swamp Twig Rush indicates a seasonally-inundated freshwater environment that stays moist most of the year. Sedgelands dominated by Swamp Twig-Rush provide habitat for a range of waterbirds. These sedgelands may be degraded by pasture improvement, grazing and trampling livestock, nutrient inputs, weed invasion and changes in water regime that result in drying out or increased salinity. Although this species is likely to resprout after fire, intense fires, particularly after prolonged drought, are seen as a threat to the Northern Territory population.

Look after Swamp Twig-Rush and other wetland plants by protecting wetlands from grazing and trampling by feral animals or livestock, and avoid activities that reduce water flow to wetlands. Where possible fence wetlands and provide alternative sources of water. Minimise use of fertilizers near wetlands, and control water weeds and grasses, such as Couch Grass (*Cynodon dactylon*), that colonise wetland edges. If necessary, reduce fire hazard by burning small patches when conditions will allow fires to be restricted to target areas.

Photo: *© Martin Armstrong*

Northern Territory Status: Endangered

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=350995

Last updated September 2008

Best practice management for Swamp Twig-Rush in the Northern Territory

- **Maintain ground layer**
- **Fence key habitat**
- **Manage fire**
- **Take care with fertiliser use**
- **Manage water extraction sustainably**
- **Protect wetland habitat**
- **Report new populations**

Caldwell's Clubrush

Bolboschoenus caldwellii

What it looks like: Caldwell's Clubrush is a perennial sedge with stems that are triangular in cross section. It can grow up to 1 metre high, but is usually much shorter. Each flowering stem produces between one and three tight clusters of florets that develop into golden to red-brown nutlets.

Where it lives: Caldwell's Clubrush grows on the edge of permanent or semi-permanent water bodies. Although widespread, both in Australia and overseas, it has only been recorded at a few sites in the Northern Territory, between Finke Gorge and Jervois Station.

Importance as an indicator: Presence of healthy patches of Caldwell's Clubrush reflects well on the management of arid wetlands. Moist areas in arid environments are the focus of both native and exotic grazing animals. Concentrations of livestock can result in wetland edges being trampled and dug over, to the detriment of Caldwell's Clubrush. Couch Grass can also out compete the species.

Look after Caldwell's Clubrush and other wetland ground cover plants by preventing the spread of invasive grasses, and ensuring wetlands are protected from both domestic livestock and feral animals.

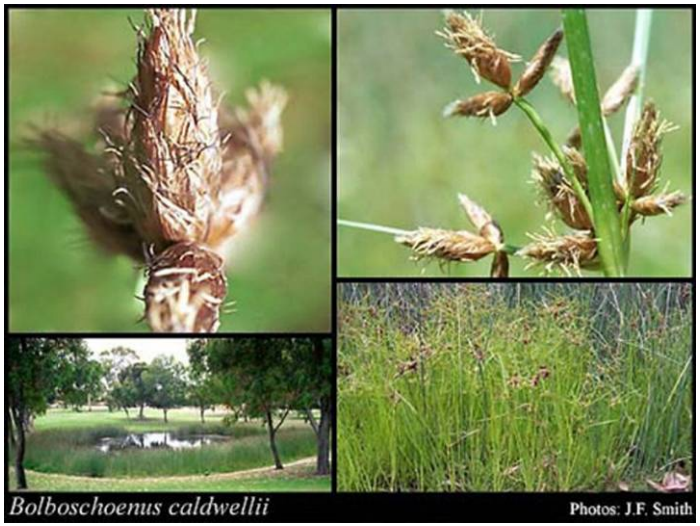


Photo: *© J.F. Smith*†

Northern Territory Status: Endangered

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=351005

Last updated September 2008

Best practice management for Caldwell's Clubrush in the Northern Territory

- **Maintain ground layer**
- **Control pest animals**
- **Control weeds**
- **Graze moderately & periodically spell country from grazing**
- **Fence key habitat**
- **Protect wetland habitat**

Dwarf Desert Spike-rush

Eleocharis papillosa

What it looks like: Dwarf Desert Spike-rush is a small erect sedge, typically less than 10 cm high. It produces stems and leaves in response to flooding. As the water recedes and the soil dries and hardens, all above ground parts die back, and its energy reserves are transferred to underground roots, rhizomes and tubers to await the next flood.

Where it lives: Dwarf Desert Spike-rush is a plant of ephemeral wetlands of arid areas, notably fresh or brackish swamps. It is known only from the Northern Territory, at scattered locations between the Simpson and Tanami Deserts.

Importance as an indicator: Presence of healthy patches of Dwarf Desert Spike-rush reflects well on the management of ephemeral, arid wetlands. Moist areas in arid environments are the focus of both native and exotic grazing animals. Concentrations of livestock can result in these wetlands being trampled and dug over to the detriment of Dwarf Desert Spike-rush. Invasion and displacement by Couch Grass is also a problem for this species.

Look after Dwarf Desert Spike-rush and other wetland ground cover plants by preventing the spread of invasive grasses, and ensuring ephemeral wetlands are protected from both domestic livestock and feral animals. Avoid activities that reduce water flow to these important habitats.

Photo: © NRETA

Northern Territory Status: Vulnerable
Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=351125

Last updated September 2008

Best practice management for Dwarf Desert Spike-rush in the Northern Territory

- **Maintain ground layer**
- **Control pest animals**
- **Control weeds**
- **Graze moderately & periodically spell country from grazing**
- **Manage water extraction sustainably**
- **Protect wetland habitat**

Coastal Plain Spike-rush

Eleocharis retroflexa

What it looks like: Coastal Plain Spike-rush is a diminutive, grass-like sedge, with stem clasping leaves that are so small they can easily be missed. Each flowering stem produces tight clusters of florets that develop into reddish-brown nutlets.

Where it lives: Coastal Plain Spike-rush is a plant of the margins of seasonal swamps, where it grows mostly submerged in shallow water. In the Northern Territory, it has only been reported growing on the laterite of the Wingate Mountains plateau and on sandstone, in Nitmiluk National Park. Elsewhere through its pan-tropical distribution, it is more commonly found in coastal swamps.

Importance as an indicator: The restricted distribution of Coastal Plain Spike-rush in the Northern Territory is likely to reflect limited availability of suitable habitat. However, as with most plants of the sandstone plateau, fire management is likely to be important for this species. Similarly, wetland plants are likely to be adversely affected by pigs digging up wetlands as they dry out.

Look after Coastal Plain Spike-rush and other plants of the stone country by managing fire. Implement a fire regime that ensures large areas of habitat remain unburnt for several years. In order to do this, establish a network of patchy fires each year, lighting them only when mild weather conditions and adequate breaks in the fuel layer allow their containment to the target area.

Photo: © Ian Cowie

Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=253020

Last updated September 2008

Best practice management for Coastal Plain Spike-rush in the Northern Territory

- **Maintain ground layer**
- **Control pest animals**
- **Manage fire**
- **Protect wetland habitat**

Mapania

Mapania macrocephala

What it looks like: Mapania is a large coarse sedge that is sometimes likened to Screw Palms (*Pandanus* spp.). Its leaves, which can be as long as 4 metres, have three ribs and distinct secondary nerves, and are spiny along the edges. Mapania produces single-seeded fleshy fruits called drupes.

Where it lives: Mapania grows in wet, spring-fed rainforests in many parts of Indonesia, Philippines, New Guinea and northern Australia. In the Northern Territory, it is known from only a few locations on Bathurst and Melville Islands and in north-eastern Arnhem Land.

Importance as an indicator: Persistence of Mapania is one indicator of the health of the rainforest in which it lives. The wet conditions it requires are particularly sensitive to changes in hydrology caused by unseasonably dry weather, vegetation clearance or water extraction. Drying out of the rainforest may allow incursions by fire. Killed by fire, Mapania may take 4 or five years after a fire to produce seed, so its persistence is also an indicator of good fire management. Feral pigs dig the soil looking for roots and tubers, may prevent the recruitment of Mapania.

Look after Mapania by and other moisture-loving plants by protecting their rainforest habitat from clearance and disturbance. Back-burn away from rainforest stands early in the dry season or after the first wet season storms to break up the fuel layer and prevent incursions by late dry season fires. Control weeds (such as Mission Grass) that increase fuel loads and fire hazard. Control pigs with baits and traps. Ensure any water extraction does not reduce moisture availability to this species through to the end of the dry season.

Photo: *© Dave Liddle*

Northern Territory Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=254350

Last updated September 2008

Best practice management for Mapania in the Northern Territory

- **Protect rainforest habitat**
- **Maintain ground layer**
- **Control pest animals**
- **Control weeds**
- **Manage fire**
- **Manage water extraction sustainably**
- **Report new populations**

Haresfoot Grass *Ectrosia blakei*

What it looks like: This Haresfoot Grass is a delicate, spindly, annual grass, that grows in loose clumps, no more than half a metre tall. It has open untidy, branched flower panicles, each spike having two rows of bristled spikelets. It can be difficult to tell apart from several more common Haresfoot Grasses.

Where it lives: This Haresfoot Grass grows on laterite, white sand or sandy loam soils, in woodlands dominated by Darwin Stringybark (*Eucalyptus tetrodonta*), Darwin Box (*Eucalyptus tectifica*) or Paperbark (*Melaleuca nervosa*), sometimes in seasonally inundated areas. It is known from a few locations between the Gulf Plains of Queensland and Arnhem Land in the Northern Territory, where it has been found to be abundant.

Importance as an indicator: The presence of good populations of this Haresfoot Grass may indicate no more that the presence of people to record it at the right time of the year. Like many weak annual grasses, it may be locally abundant in the late wet season and early dry season, but leave few traces later in the year. However, feral animal management is an issue in its habtiat, which may be vulnerable to disturbance by pigs and buffalo. Fires, though also an issue in the area, are unlikely to threaten this species, whose growth, flowering and seeding are completed before the grass layer dries out sufficiently for traditional burning to begin at the end of July.

Look after Haresfoot Grass and other species of seasonally inundated areas by controlling pest animals, especially pigs and buffalo, which congregate as this habitat begins to dry out. Feral cattle may also need to be managed if they are in high numbers. Maintain the Indigenous fire management under which this species has persisted for thousands of years. Further records of this species may assist in determining its conservation status in the Northern Territory.

Photo: *© Ian Cowie*

Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=252984

Last updated September 2008

Best practice management for Haresfoot Grass in the Northern Territory

- **Maintain ground layer**
- **Control pest animals**
- **Manage fire**
- **Report new populations**
- **More information is needed about this species**

Fitzgerald's Spinifex

Triodia fitzgeraldii

What it looks like: Fitzgerald's Spinifex if a hummock grass with fine, non-sticky leaves and narrow flower spikes, up to 30 cm long and 5 mm wide.

Where it lives: This species of Spinifex plant grows on rocky soils and sandstone hills. Its distribution extends from the Victoria Bonaparte bioregion in the Northern Territory into the North Kimberley bioregion of Western Australia. In the Northern Territory, it is known only from Gregory National Park.

Importance as an indicator: With its narrow habitat requirements and restricted distribution, persistence of Fitzgerald's Spinifex will depend on good environmental management. A gracile species like this is likely to be a poor competitor, so may benefit where other Spinifex species are reduced by periodic fires. Although it can resprout after fire, it may take two or more years to regain its former vigour and produce seeds. So fire regimes will need to be managed carefully.

Look after Fitzgerald's Spinifex by implementing a fire regime that ensures a mosaic of habitats burnt at different times, with most areas being burnt no more frequently than every three to five years. To do this, small areas may need to be burnt most years in order to create breaks in the fuel load. Fires should only be lit under mild weather conditions, when extent of burn can be controlled. Do not allow Fitzgerald's Spinifex to be overgrazed, either by domestic stock or by feral animals. Control weeds that have the potential to replace large areas of Spinifex, such as Buffel Grass.

Photo: *© Martin Armstrong*

Northern Territory Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=255924

Last updated September 2008

Best practice management for Fitzgerald's Spinifex in the Northern Territory

- **Maintain ground layer**
- **Control weeds**
- **Graze moderately & wet season spell**
- **Manage fire**

Arrowleaf Monochoria

Monochoria hastata

What it looks like: Arrowleaf Monochoria is an emergent aquatic herb with stems that can be over one metre tall. It has arrow-shaped basal leaves, and each inflorescence spike of 25 to 60 purple or white flowers is also partly enclosed in a stem-clasping, arrow-shaped leaf.

Where it lives: Arrowleaf Monochoria grows in floating mat vegetation in permanent to near-permanent back-swamps, drainage channels and billabongs. All Australian records are from the floodplains of the Finniss, Reynolds and Wildman Rivers, Northern Territory. Also native to New Guinea, India, Sri Lanka and south-east Asia, it is both a cultivated food plant and an aggressive weed of cultivation in south-east Asia and Fiji, and a noxious weed in the United States.

Importance as an indicator: Although Arrowleaf Monochoria is elsewhere widespread and problematic, persistence of this species in the Top End is one indicator of floodplain health. Its habitat is vulnerable to both disturbance by feral animals, such as buffalo and pigs, and invasion by introduced weeds, such as Para Grass (*Urochloa mutica*) and Prickly Mimosa (*Mimosa pigra*). Changes to sea level and/or hydrology would be detrimental to this floodplain species. Changing conditions have allowed many plants to be replaced by another native wetland plant, Swamp Rice Grass (*Leersia hexandra*).

Look after Arrowleaf Monochoria by ridding the Top End floodplains of Prickly Mimosa, Para Grass and other aggressive weeds, and keeping feral buffalo and cattle numbers under control. Avoid activities that accelerate saltwater intrusion or unsustainably increase water extraction. In particular, minimise your contribution to climate change. The vegetation of these floodplains may benefit from reinstating traditional methods of progressively burning patches as the waters recede and the soils dry out.

Photo: © Ian Cowie

Northern Territory Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Aston, H.I. 1987. Pontederiaceae. Pp 46-55 in *Flora of Australia*. Vol. 45, Hydatellaceae to Liliaceae. Australian Government Publishing Service, Canberra.

Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=254458

Last updated September 2008

Best practice management for Arrowleaf Monochoria in the Northern Territory

- **Maintain ground layer**
- **Control pest animals**
- **Control weeds**
- **Manage fire**
- **Manage water extraction sustainably**
- **Protect wetland habitat**
- **Minimise your contribution to climate change**

Burmannia

Burmannia sp. Bathurst Island (R.J.Fensham 1021)

What it looks like: Burmannia bears a tight cluster of small tubular flowers at the end of short leafless stalks, no more than 12 cm high. Lacking green chlorophyll, the whole plant is completely white. Unable to produce its own energy, it lives on dead plants, storing the starch it derives from them in small underground tubers.

Where it lives: Burmannia grows in damp peat in spring-fed rainforests. It has been recorded in only two rainforest patches in the north of Bathurst Island in the Northern Territory.

Importance as an indicator: Presence of Burmannia in rainforest patches indicates a healthy ground layer, undisturbed by pigs, which are particularly fond of Burmannia tubers.

Look after Burmannia and other moisture-loving plants by protecting their habitat from grazing animals. Wherever possible, spring-fed rainforest patches should be fenced to exclude pigs.

Photo: *© Kym Brennan*

Northern Territory Status: Endangered
Australian Status: Endangered

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=256596

Last updated September 2008

Best practice management for Burmannia in the Northern Territory

- **Protect rainforest habitat**
- **Maintain tree cover**
- **Maintain ground layer**
- **Control pest animals**
- **Fence key habitat**

Beard Orchid

Calochilus caeruleus

What it looks like: This Beard Orchid has short-lived, greenish flowers that are streaked reddish-brown and have a beard of red hairs. Four to eight flowers are borne atop a tall, slender stem. It is a perennial plant, adapted to extremes of wet and dry conditions. It begins flowering once the waters recede; only producing leaves as the flowers wither and the seeds are shed. As the dry season progresses and the soil dries and hardens, all above ground parts die back, and energy reserves are transferred to an underground tuber to await the following year.

Where it lives: This Beard Orchid is a plant of swamps and seasonally-flooded areas in open forest, wet heathland and paperbark woodland. In the Northern Territory, it has only been recorded on Melville Island. It is also found in northern Queensland, Western Australia and New Guinea.

Importance as an indicator: Presence of Beard Orchids indicates a healthy ground layer, undisturbed by pigs, which dig up seasonally flooded country as it begins to dry out, looking for succulent roots and tubers. The seasonally wet habitat of Beard Orchid is highly sensitive to any change in the water table.

Look after Beard Orchid and other moisture-loving plants by protecting their habitat from grazing animals as it dries out. In particular, control pig numbers. Seasonally-flooded habitats also require careful fire management. Often too wet to burn until late in the year, they are vulnerable to intense late dry season fires that destroy the canopy and shrub cover. However, infrequent burning can lead to vegetation thickening and the replacement of ground cover by woody plants. A patchy fire regime that includes some early burning and fires lit after the first storms can help to reduce fuel loads, and restrict later wildfires. Water extraction decisions in the catchment should consider impacts on Beard Orchid.

Photo: *© Martin Armstrong*

Northern Territory Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=252205

Last updated September 2008

Best practice management for Beard Orchid in the Northern Territory

- **Do not clear habitat**
- **Manage thickening**
- **Maintain ground layer**
- **Control pest animals**
- **Manage fire**
- **Manage water extraction sustainably**

Ground Orchid

Habenaria rumphii

What it looks like: This is a showy Ground Orchid with numerous white flowers on a long tall inflorescence growing from a rosette of basal leaves.

Where it lives: This Orchid grows on sandy soils in seasonally-flooded grassy areas in open forest and woodland. Found both in Queensland and overseas, in the Northern Territory it is known only from the upper Howard River catchment, where flooding is at least partly driven by ground water seepage.

Importance as an indicator: Healthy populations of this Orchid reflect an environment that is relatively unaffected by pigs, weeds or mining, and has a well-managed fire regime and healthy moisture balance. Ground water levels are particularly important, and water extraction has the potential to reduce extent and duration of flooding. Individual plants may be destroyed by sand mining or pigs, which dig up seasonally flooded country as it begins to dry out.

Look after Ground Orchid by restricting water extraction to sustainable levels, and protect key habitat from clearance and sand mining. Along with other moisture-loving plants, Ground Orchids need protecting from grazing animals, particularly pigs, as their habitat dries out. Seasonally-flooded habitats also require careful fire management. Often too wet to burn until late in the year, they are vulnerable to intense late dry season fires that destroy the canopy. However, infrequent burning can lead to vegetation thickening and replacement of ground cover by woody plants. A patchy fire regime that includes some early burning and fires lit after the first storms can help to reduce fuel loads, and restrict later intense fires. Control transformer weeds, particularly Prickly Mimosa and Para Grass. Commercial availability of this species may relieve any harvesting pressure on wild populations, but may also increase demand.

Photo: *© Bill Lavarack*

Northern Territory Status: Endangered

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=253648

Last updated September 2008

Best practice management for Ground Orchid in the Northern Territory

- **Do not clear habitat**
- **Manage thickening**
- **Maintain ground layer**
- **Control pest animals**
- **Control weeds**
- **Manage fire**
- **Do not collect from the wild**
- **Restrict sand mining**
- **Manage water extraction sustainably**
- **Report new populations**

Luisia Orchid

Luisia teretifolia

What it looks like: Luisia Orchid is a pale green, wiry plant that forms straggly, and sometimes weeping clumps along tree branches. Its long, tubular leaves are borne in two rows along the stem. It has green flowers with a dark burgundy lip.

Where it lives: Luisia Orchid is a widespread species that is found in north-east Queensland, through Papua New Guinea and Indonesia to Malaysia. Its distribution extends to the Northern Territory, where it is known from a few locations on Melville Island and on the mainland. In the Northern Territory, Luisia Orchid grows on the margins of monsoon rainforests, and, elsewhere, in mangroves and other coastal and near-coastal woodlands.

Importance as an indicator: With its restricted distribution and narrow habitat requirements, persistence of Luisia Orchid will be a good indicator of the health of the rainforests in which it grows. As it is killed by fire, its persistence will depend on good fire management in drier vegetation adjoining its rainforest habitat. Its edge-of-forest habitat also makes this species vulnerable to cyclone damage.

Look after Luisia Orchid and other rainforest plants by managing fire well. Back-burning around rainforest patches early in the year or after the first wet season storms to reduce fuel hazards will protect these sensitive habitats from periodic fire incursions. Control weeds (such as Gamba Grass or Mission Grass) that increase fuel loads and fire hazard. Commercial availability of this easy to propagate species may relieve any harvesting pressure on wild populations, but may also increase demand.

Photo: *© NRETA*

Northern Territory Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Howcroft, N.H.S. 1991-1994. Luisia teretifolia. Papua New Guinea Field Extracts. www.orchidspng.com/field_notes.html

Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=254251

Last updated September 2008

Best practice management for Luisia Orchid in the Northern Territory

- **Protect rainforest habitat**
- **Maintain tree cover**
- **Manage fire**
- **Do not collect from the wild**

Ground Orchid

Malaxis latifolia

What it looks like: Malaxis latifolia is a ground orchid with large, bright green membranous leaves arising from a central stem. It produces a tall spike of dozens of tightly clustered greenish-brown or purple flowers.

Where it lives: This ground orchid grows in New Guinea, Indonesia, Malaysia and India to Japan, and Australia. In Queensland, it occurs in rainforests, along protected stream banks in open forest and sometimes close to low-lying swampy areas. The single known population in the Northern Territory, near Munmarlary, is in a wet, spring-fed rainforest. The plants die back to an underground tuber as the dry season sets in.

Importance as an indicator: Persistence of this ground orchid is dependent on the rainforest in which it lives. The wet conditions it requires are particularly sensitive to changes in hydrology caused by unseasonably dry weather, vegetation clearance or water extraction. Feral pigs are also attracted to wet areas in rainforests, where they dig up the soil looking for roots and tubers, so may eliminate this ground orchid.

Look after Ground Orchid by controlling pigs with baits and/or traps. If necessary, protect the population with pig-proof fencing. Make sure decisions about developments in the catchments consider impacts on groundwater availability. Commercial availability of this attractive species may relieve any harvesting pressure on wild populations, but may also increase demand.

Photo: *© Martin Armstrong*

Northern Territory Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=254323

Last updated September 2008

Best practice management for Ground Orchid in the Northern Territory

- **Protect rainforest habitat**
- **Maintain tree cover**
- **Maintain ground layer**
- **Control pest animals**
- **Do not collect from the wild**
- **Protect wetland habitat**

Ground Orchid

Malaxis marsupichila

What it looks like: Stems of this Ground Orchid each have up to six shiny green, broad, paper-thin, near-basal leaves with wavy margins, and a long flower spike bearing numerous small purple flowers.

Where it lives: This Ground Orchid grows in shady locations at the edges of monsoon rainforest and in littoral rainforest. It forms colonies in moist sandy or clay soils rich in leaf litter. It is found only in Far North Queensland and in the Top End of the Northern Territory, where it is known only from Gunn Point.

Importance as an indicator: With its restricted distribution and narrow habitat requirements, persistence of this Ground Orchid will be a good indicator of the health of the rainforest patches in which it grows. Healthy populations reflect a well-managed fire regime and healthy moisture balance, and minimal disturbance from unmanaged fire, weeds, pest animals or horticultural collectors.

Look after Ground Orchid and other plants of monsoon rainforests by protecting their habitat from vegetation clearance and disturbance. Any development proposals in the region should consider the possible presence of Ground Orchid, which is unlikely to survive industrial development or rural subdivision. Back-burn around rainforest patches early in the year or after the first wet season storms to reduce fuel hazards and protect these sensitive habitats from periodic fire incursions. Control weeds such as Gamba Grass, which increase fire hazard, and feral animals, especially pigs which dig up plants looking for food. Establishing this attractive species in cultivation may reduce collection pressure, but may also increase demand.

Photo: *© Bill Lavarack*

Northern Territory Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=254332

Last updated September 2008

Best practice management for Ground Orchid in the Northern Territory

- **Do not clear habitat**
- **Protect rainforest habitat**
- **Maintain ground layer**
- **Control pest animals**
- **Control weeds**
- **Manage fire**
- **Do not collect from the wild**
- **Report new populations**

Epiphytic Orchid

Thrixspermum congestum

What it looks like: *Thrixspermum congestum* is an epiphytic orchid that grows on tree branches. It produces two rows of yellowish-green, leathery leaves, and showy clusters of sweet-smelling, cream-coloured flowers.

Where it lives: This epiphytic orchid grows in the Northern Territory, Queensland and Papua New Guinea. In the Northern Territory, it has been recorded only on the Tiwi Islands, and collected only from Melville Island. It grows in humid, airy situations, often in exposed positions on small branches, in lowland rainforests and on mangroves. In Lae, Papua New Guinea, it grows prolifically on street trees.

Importance as an indicator: With its restricted distribution and narrow habitat requirements, Thrixspermum will depend on good environmental management. As *Thrixspermum congestum* is killed by fire, its presence at the edges of rainforest is also an indicator of good fire management. It could also be sensitive to disturbance by feral animals, changes in hydrology, or cyclonic events. This attractive orchid may also be threatened by horticultural collectors.

Look after Epiphytic Orchid by protecting its habitat from clearance and disturbance. Make sure decisions about developments in the catchments consider impacts on groundwater availability. Manage fire in the surrounding woodlands. Back-burning around rainforest patches early in the year or after the first wet season storms to reduce fuel hazards will protect these sensitive habitats from periodic fire incursions. Control feral animals that destabilise the rainforest. Establishing this easily propagated species in cultivation may reduce collection pressure, but may also increase demand.

Photo: *© Dave Liddle*

Northern Territory Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Howcroft, N.H.S. 1991-1994. Luisia teretifolia. Papua New Guinea Field Extracts. www.orchidspng.com/field_notes.html

Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=255825

Last updated September 2008

Best practice management for Epiphytic Orchid in the Northern Territory

- **Protect rainforest habitat**
- **Maintain tree cover**
- **Control pest animals**
- **Manage fire**
- **Do not collect from the wild**
- **Manage water extraction sustainably**

Ground Orchid

Zeuxine oblonga

What it looks like: This small Ground Orchid has fleshy, creeping stems, each with three to seven oval leaves. Its dull green and white flowers barely open to display themselves. A perennial plant, it is adapted to extremes of wet and dry conditions. As the soil dries and hardens at the start of the dry season, resources are transferred from above ground parts to underground tubers.

Where it lives: This Ground Orchid grows in colonies in dark, moist places on the rainforest floor, or in wet peaty areas near streams. In the Northern Territory, it is known from five, widely spaced localities between Keep River and Adelaide River. It is also found in New South Wales and Queensland.

Importance as an indicator: Presence of Ground Orchids indicates a healthy rainforest ground layer, undisturbed by pigs. The wet conditions it requires are particularly sensitive to changes in hydrology caused by unseasonably dry weather, vegetation clearance or water extraction, which in turn, may allow fire incursions. This unusual species may gain the attention of horticultural collectors.

Look after Ground Orchid by protecting rainforest from clearance and disturbance. Manage fire in drier vegetation adjoining its rainforest habitat. Back-burn away from rainforest stands early in the dry season or after the first wet season storms to break up the fuel layer and prevent incursions by late dry season fires. Control weeds (such as Gamba Grass) that increase fuel loads and fire hazard. Make sure decisions about developments in the catchments consider impacts on groundwater availability. Commercial availability of this easy to propagate species may relieve any harvesting pressure on wild populations, but may also increase demand.

Photo: © David Jones CSIRO

Northern Territory Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=256282

Last updated September 2008

Best practice management for Ground Orchid in the Northern Territory

- **Protect rainforest habitat**
- **Maintain tree cover**
- **Maintain ground layer**
- **Control pest animals**
- **Control weeds**
- **Manage fire**
- **Do not collect from the wild**
- **Manage water extraction sustainably**

Howard Springs Toadlet

Uperoleia daviesae

What it looks like: Howard Springs Toadlet is a thumb-sized frog, with dark skin speckled with pale brown bumps, and a narrow yellow to pale red stripe down the middle of its back. It has a cream belly and an orange-red groin. Howard Springs Toadlet belongs to a small group of frogs that has teeth. It has a distinctive raspy call.

Where it lives: The Howard Springs Toadlet is believed to be confined to seasonally flooded areas in the Howard and Elizabeth River catchments, in the Darwin area. Its known habitat is sandy areas vegetated by grassland, sedgeland, or Paperbark (*Melaleuca*) woodland.

Importance as an indicator: With its restricted distribution and narrow habitat requirements, persistence of the Howard Springs Toadlet will be a litmus test of good environmental management. It will be particularly sensitive to any changes in water flow or salinity, and to disturbance caused by buffalo, cattle and pigs. It could also be adversely affected by weed invasion or altered fire regimes.

Look after Howard Springs Toadlet by protecting its habitat from vegetation clearance and disturbance. Any proposals for sand mining or rural subdivision in the region should consider impact on this toadlet. Avoid water extraction that adversely affectes the Howard or Elizabeth River floodplains. Control weeds that flourish in floodplain environments, especially Prickly Mimosa and Para Grass. When controlling weeds, ensure pesticides do not enter the waterway and avoid disturbing the river banks. Eradicate any feral buffalo, cattle and pigs, and keep domestic livestock off sensitive wetland environments. The vegetation of these floodplains may benefit from reinstating traditional methods of progressively burning patches as the waters recede and the soils dry out.

Photo: © Ian Morris

Northern Territory Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=347337

Last updated September 2008

Best practice management for Howard Springs Toadlet in the Northern Territory

- **Do not clear habitat**
- **Maintain ground layer**
- **Control pest animals**
- **Control weeds**
- **Exclude stock from at least part of pastoral properties**
- **Manage fire**
- **Limit pesticide use**
- **Restrict sand mining**
- **Manage water extraction sustainably**
- **Protect wetland habitat**
- **Report new populations**
- **More information is needed about this species**

Loggerhead Turtle

Caretta caretta

What it looks like: The Loggerhead Turtle has the largest head of all sea turtles found in Northern Territory waters. Adults can also be identified from their reddish-brown shells that have five pairs of large scales along either side. Hatchlings have dark brown shells and light brown underbellies. They leave asymmetrical tracks in the sand because of their loping gait.

Where it lives: Only non-breeding Loggerhead Turtles are known to occur in Northern Territory waters, coming from breeding populations to the east and west. Here they feed on shellfish, crabs, sea urchins and jellyfish from coral reefs, rocky reefs, seagrass meadows and sea bottoms.

Importance as an indicator: Rarely making landfall in the Northern Territory, the ongoing presence of Loggerhead Turtles reflects conditions at distant breeding grounds. However, their survival also depends on sustainable fishing techniques, as turtles may drown in trawl nets, become ensnared in longlines or marine debris.

Look after Loggerhead Turtle and other sea turtles by cleaning up marine debris, particularly abandoned ghost nests, and prevent plastic bags from contributing to marine pollution. Make sure any turtle harvesting is undertaken according to sustainable management planning, and that measures are taken to prevent turtles ending their days as bycatch. Fit appropriate turtle exclusion or bycatch reduction devices to fishing nets.

Photo: © EPA Qld

Northern Territory Status: Endangered
Australian Status: Endangered

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Environment Australia 2003. Recovery Plan for Marine Turtles in Australia. © Commonwealth of Australia, Canberra.

Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=177589

Last updated September 2008

Best practice management for Loggerhead Turtle in the Northern Territory

- **Limit harvest to sustainable levels**
- **Reduce bycatch**
- **Clean up ghost nets**
- **Prevent marine pollution**
- **Protect seagrass beds**

Green Turtle *Chelonia mydas*

What it looks like: The Green Turtle is the most abundant of sea turtles in Northern Territory waters. It can be distinguished from other turtles by its olive-green, heart-shaped, darkly patterned shell and four pairs of shields between the centre and outer margin of the shell. Adults can grow to a metre long. They leave a symmetrical trail in the sand.

Where it lives: Adult Green Turtles feed on seagrass and algae in seagrass meadows. Juveniles take small fish as well. Both breeding and non-breeding animals are found in Northern Territory waters, but these individuals probably range far outside this jurisdiction. Green Turtles nest on sandy beaches and are found in tropical and subtropical waters worldwide.

Importance as an indicator: Healthy Green Turtle populations are a reflection of the fishing and hunting activities across their range, as well as predation levels at nesting sites.

Look after Green Turtle and other sea turtles by controlling potential predators at nesting sites, especially pigs and wild dogs. Removing pigs that have learned to prey on nests is more important than removing entire pig populations, which is really only possible on naturally isolated beaches. Clean up marine debris, particularly abandoned ghost nests, and prevent such items as plastic bags from contributing to marine pollution. Make sure any harvesting of turtles or their eggs is undertaken according to sustainable management planning, and that measures are taken to prevent turtles ending their days as bycatch. Do not trawl seagrass beds. On commercial fishing boats, fit appropriate turtle exclusion or bycatch reduction devices to fishing nets.

Photo: *© EPA Qld*

Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Environment Australia 2003. Recovery Plan for Marine Turtles in Australia. © Commonwealth of Australia, Canberra.

Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=176291

Last updated September 2008

Best practice management for Green Turtle in the Northern Territory

- **Control pest animals**
- **Limit harvest to sustainable levels**
- **Reduce bycatch**
- **Clean up ghost nets**
- **Prevent marine pollution**
- **Protect seagrass beds**

Hawksbill Turtle

Eretmochelys imbricata

What it looks like: The Hawksbill Turtle gets its name from its prominent upper jaw, which gives it a beak-like appearance. Its high-domed, heart-shaped shell is olive-green to brown with black, brown or red-brown markings, and has overlapping scales. They leave asymmetrical tracks in the sand because of their loping gait.

Where it lives: Hawksbill Turtles occur through tropical, subtropical and temperate oceans worldwide, where they feed on a wide range of plant and animal foods. They nest on narrow beaches often under vegetation, travelling long distances in the non-breeding season to feed.

Importance as an indicator: Hawksbill Turtle populations are a reflection of the fishing and hunting activities across their range, as well as predation levels at nesting sites.

Look after Hawksbill Turtle and other sea turtles by controlling potential predators at nesting sites, especially pigs and wild dogs. Removing pigs that have learned to prey on nests is more important than removing entire pig populations, which is really only possible on naturally isolated beaches. Clean up marine debris, particularly abandoned ghost nests, and prevent such items as plastic bags from contributing to marine pollution. Make sure any harvesting of turtles or their eggs is undertaken according to sustainable management planning, and that measures are taken to prevent turtles ending their days as bycatch. On commercial fishing boats, fit appropriate turtle exclusion or bycatch reduction devices to fishing nets.

Photo: *© EPA Qld*

Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Environment Australia 2003. Recovery Plan for Marine Turtles in Australia. © Commonwealth of Australia, Canberra.

Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=176298

Last updated September 2008

Best practice management for Hawksbill Turtle in the Northern Territory

- **Control pest animals**
- **Limit harvest to sustainable levels**
- **Reduce bycatch**
- **Clean up ghost nets**
- **Prevent marine pollution**
- **Protect seagrass beds**

Olive Ridley

Lepidochelys olivacea

What it looks like: The Olive Ridley is the smallest Australian sea turtle, only reaching 70 cm in length. It has an olive-grey shell, with six large scales along either side of its back.

Where it lives: Olive Ridleys are bottom-feeders in shallow near-shore waters, where they take molluscs, crabs, echinoderms and gastropods. They are found in tropical and subtropical waters worldwide, and travel long distances from their nesting sites. Northern Territory beaches between Melville Island and Groote Eylandt provide the majority of Australia's nesting habitat for Olive Ridleys.

Importance as an indicator: Healthy Olive Ridley populations are a reflection of the fishing and hunting activities across their range, as well as predation levels at nesting sites.

Look after Olive Ridley and other sea turtles by controlling potential predators at nesting sites, especially pigs and wild dogs. Removing pigs that have learned to prey on nests is more important than removing entire pig populations, which is really only possible on naturally isolated beaches. Clean up marine debris, particularly abandoned ghost nests, and prevent such items as plastic bags from contributing to marine pollution. Make sure any turtle harvesting is undertaken according to sustainable management planning, and that measures are taken to prevent turtles ending their days as bycatch. On commercial fishing boats, fit appropriate turtle exclusion or bycatch reduction devices to fishing nets.

Photo: *© EPA Qld*

Australian Status: Endangered

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Environment Australia 2003. Recovery Plan for Marine Turtles in Australia. © Commonwealth of Australia, Canberra.

Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=176305

Last updated September 2008

Best practice management for Olive Ridley in the Northern Territory

- **Control pest animals**
- **Limit harvest to sustainable levels**
- **Reduce bycatch**
- **Clean up ghost nets**
- **Prevent marine pollution**

Flatback Turtle

Natator depressus

What it looks like: The shell of the Flatback Turtle is greenish-grey, has four large scales arranged either side, curves up at the edges, and can be nearly a metre in length. This marine turtle leaves symmetrical tracks in the sand.

Where it lives: Flatback Turtles feed on soft corals, jellyfish and sea cucumbers in shallow marine waters. They are found only in the tropical waters of Australia and New Guinea. They have an extensive distribution around the coastline of the Northern Territory, and breed at many mainland and island sites.

Importance as an indicator: Healthy Flatback Turtle populations are a reflection of the fishing and hunting activities across their range, as well as predation levels at nesting sites.

Look after Flatback Turtle and other marine turtles by controlling potential predators at nesting sites, especially pigs and wild dogs. Removing pigs that have learned to prey on nests is more important than removing entire pig populations, which is really only possible on naturally isolated beaches. Clean up marine debris, particularly abandoned ghost nests, and prevent such items as plastic bags from contributing to marine pollution. Make sure any turtle harvesting is undertaken according to sustainable management planning, and that measures are taken to prevent turtles ending their days as bycatch. Fit appropriate turtle exclusion or bycatch reduction devices to fishing nets.

Photo: © EPA Qld

Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Environment Australia. 2003. Recovery Plan for Marine Turtles in Australia. © Commonwealth of Australia, Canberra.

Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=176284

Last updated September 2008

Best practice management for Flatback Turtle in the Northern Territory

- **Control pest animals**
- **Limit harvest to sustainable levels**
- **Reduce bycatch**
- **Clean up ghost nets**
- **Prevent marine pollution**

Leatherback Turtle

Dermochelys coriacea

What it looks like: The Leatherback Turtle is the largest of all living sea turtles. It can weigh up to 500 kg and have a shell length of over one and a half metres. Its leathery shell has five longitudinal ridges and tapers to a point at the tail end. It is black with lighter spots. The shells of hatchlings are black with white markings on the ridges.

Where it lives: Rather than congregating around reefs or seagrass meadows, Leatherback Turtles take jellyfish and other marine macro-plankton from open ocean waters. There are few records on Leatherback Turtles nesting in Australia, and the time they spend in Northern Territory waters may be fleeting, as they prefer to feed in the temperate zone.

Importance as an indicator: Leatherback Turtle populations are a reflection of the fishing and hunting activities across their range, as well as predation levels at nesting sites, which are outside the Northern Territory. This species is particularly vulnerable to marine pollution, prone to mistaking plastic bags for jelly-fish.

Look after Leatherback Turtle and other sea turtles by cleaning up marine debris, particularly abandoned ghost nests, and prevent plastic bags from contributing to marine pollution. Take measures to prevent turtles ending their days as bycatch. On commercial fishing boats, fit appropriate turtle exclusion or bycatch reduction devices to fishing nets. Any hunting of turtles should be under a sustainable harvest plan.

Photo: © EPA Qld

Northern Territory Status: Vulnerable
Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Environment Australia 2003. Recovery Plan for Marine Turtles in Australia. © Commonwealth of Australia, Canberra.

Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=176326

Last updated September 2008

Best practice management for Leatherback Turtle in the Northern Territory

- **Limit harvest to sustainable levels**
- **Reduce bycatch**
- **Clean up ghost nets**
- **Prevent marine pollution**

Gulf Snapping Turtle

Elseya lavarackorum

What it looks like: The Gulf Snapping Turtle is a short-necked freshwater turtle. It can grow to about 35 cm in length. Its head and shell are coppery-brown. Some shields on its white under-shell have wavy edges. It is similar to the more widespread and common Northern Snapping Turtle (*Elseya dentata*), which has straight edges to all its belly shields.

Where it lives: The Gulf Snapping Turtle is found only in rivers that drain into the Gulf of Carpentaria. This includes the rivers systems from the Calvert River, in the Northern Territory, to the Gregory River in Queensland. This freshwater turtle is mainly herbivorous, and feeds on leaves, fruits, flowers, bark and Pandanus roots. Figs may be this turtle's most important food. Young animals may eat more animal matter, such as insect larvae.

Importance as an indicator: Presence of healthy populations of Gulf Snapping turtle is a good indication of a healthy riparian ecosystem with stable river banks that are not weed infested. The nests of this species are found in soil near the water's edge, where they are particularly vulnerable to being raided by feral pigs, or trampled by stock. The species may also get caught in fishing nets.

Look after Gulf Snapping Turtle by controlling feral animals, especially pigs. Restrict access by stock to riparian areas, where necessary fencing off the riparian zone. Keep the river banks clear of weeds, such as Rubber Vine (*Cryptostegia grandiflora*) and Prickly Acacia (*Acacia nilotica*). When controlling weeds, ensure pesticides do not enter the waterway and avoid disturbing the river banks. Avoid activities that alter water table levels, or increase run-off or sedimentation. Ensure turtles do not get entangled in fishing nests.

Photo: *© Arthur Georges*

Australian Status: Endangered

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=351215

Last updated September 2008

Best practice management for Gulf Snapping Turtle in the Northern Territory

- **Control pest animals**
- **Control weeds**
- **Fence key habitat**
- **Limit pesticide use**
- **Manage water extraction sustainably**
- **Reduce bycatch**
- **Report new populations**
- **More information is needed about this species**

Yellow-snouted Gecko

Lucasium occultum

What it looks like: The Yellow-snouted Gecko is a small brown and white-patterned gecko with four brown patches on its back, a reddish head and yellow nose.

Where it lives: Yellow-snouted Geckos live in leaf litter and prey on insects and other small animals. The Yellow-snouted Gecko is a ground-dwelling animal found only in the lower Mary River/ West Alligator River catchments in deep red soils, under Darwin Stringybark (*Eucalyptus tetrodonta*) / Darwin Woollybutt (*Eucalyptus miniata*) woodland. Searches of large parts of its known habitat that have been burnt in recent years have failed to locate many animals, raising concerns for the species' survival.

Importance as an indicator: Presence of Yellow-snouted Gecko shows that fires are well managed, with significant areas being left uburnt to provide shelter required by this species.

Look after Yellow-snouted Gecko and other litter-dwelling creatures by controlling fire, and making sure that significant areas of litter remain unburnt. Control and eradicate introduced grasses, such as Gamba Grass, which increase fire hazard. Staff in the Department of Natural Resources, Environment, the Arts and Sport would be interested in accurate information on the location of new populations of this gecko.

Photo: © *Ted Johansen*

Northern Territory Status: Endangered
Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=177347

Last updated September 2008

Best practice management for Yellow-snouted Gecko in the Northern Territory

- **Maintain shrub layer**
- **Maintain ground layer**
- **Keep logs and litter**
- **Control weeds**
- **Graze moderately & wet season spell**
- **Manage fire**
- **Report new populations**

Bronzeback Snake-Lizard

Ophidiocephalus taeniatus

What it looks like: The Bronzeback Snake-Lizard is a small legless lizard, that rarely grows longer than 10 cm. Its slender bronze or fawn body is mostly tail.

Where it lives: Bronzeback Snake-Lizards live in woodland dominated by Gidgee (*Acacia cambagei*), Mulga (*Acacia aneura*) or other wattles (*Acacia* spp.), where there is a shrubby understorey and dense leaf litter. They are usually found along temporary watercourses on gibber plains. They live in burrows, and become active at dusk. They feed on insects and other small animals. Bronzebacks are known from northern South Australia and the extreme south of the Northern Territory. However, they have not been recorded in the Northern Territory for over one hundred years.

Importance as an indicator: Loss of Bronzeback Snake-Lizards from their former range in the Northern Territory indicates a decline of environmental conditions for this species. Food and shelter may have been adversely affected by grazing both by domestic stock and feral animals, especially rabbits, and by soil compaction caused by large grazing animals, such as cattle or camels.

Look after Bronzeback Snake-Lizard and other soil fauna by looking after soil health, especially along watercourses. Prevent trampling and overgrazing by fencing off sections of the watercourse and pumping water to troughs, but ensure any excess water is returned to the ecosystem.

Photo: *© Ian Morris*

Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=351035

Last updated September 2008

Best practice management for Bronzeback Snake-Lizard in the Northern Territory

- **Keep logs and litter**
- **Control pest animals**
- **Graze moderately & periodically spell country from grazing**
- **Fence key habitat**
- **Protect wetland habitat**

Arafura Snake-eyed Skink

Cryptoblepharus gurrmul

What it looks like: The Arafura Snake-eyed Skink is a small, slender ground-dwelling skink, with five digits on each foot.

Where it lives: The Arafura Snake-eyed Skink lives in coastal habitats, including beach sands, rocks and coral rubble. Where it occurs, it is present in good numbers. However, it is known only from the three islands in the Arafura Sea. These are North Goulburn Island, New Year Island and Oxley Island, northeast of Croker Island, in the Northern Territory. While it is possible that other islands support Arafura Snake-eyed Skin, its abundance when it is present suggests other populations are unlikely to have been overlooked.

Importance as an indicator: As this species lives along the shore on low islands, it is particularly vulnerable to sea level rise, storm-surges and cyclonic activity. All are predicted outcomes of climate change. The species could also be vulnerable to introduced predators, especially cats.

Look after Arafura Snake-eyed Skink and other island animals by minimising your contribution to climate change. When travelling to islands, check your load to make sure you do not transport pest animals, including cats, rats and cane toads. The future of this species may best be assured by increasing the number of islands on which it occurs.

No Photograph available

Northern Territory Status: Endangered

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=176347

Last updated September 2008

Best practice management for Arafura Snake-eyed Skink in the Northern Territory

- **Control pest animals**
- **Minimise your contribution to climate change**
- **Report new populations**
- **Establish additional populations**
- **More information is needed about this species**

VRD Black-Soil Ctenotus

Ctenotus rimacola camptris

What it looks like: VRD Black-Soil Ctenotus is a medium-sized, robust lizard that can grow up to 8 cm long. It is olive brown, with a prominent dark stripe, bordered by lines of paler scales, down the middle of its back.

Where it lives: The VRD Black-Soil Ctenotus lives only in a small area on the floodplains of the lower Ord and Keep Rivers, its distribution straddling the Western Australian/Northern Territory border. It is restricted to grasslands on cracking clay soil, where there may or may not be a sparse tree layer. These skinks shelter within the soil cracks and emerge to feed on a range of insects that they take from the ground.

Importance as an indicator: Presence of healthy populations of this skink is indicative of an environment in which grazing pressure is well managed and feral animals are under control. Perhaps the most acute threat to the species is from potential broad-scale conversion of native grassland to horticulture in the lower Ord and Keep River systems. In the longer term, woody thickening, especially by Rosewood (*Terminalia volucris*) may decrease also availability of preferred habitats. Skinks are a favoured food of cats.

Look after VRD Black-Soil Ctenotus by making sure parts of pastoral properties have low stocking rates or are excluded from cattle. Ensure adequate areas of suitable habitat are maintained under any scenario of increased horticultural use or intensification of pastoralism of the lower Ord and Keep River valleys. Control cats with effective traps and baits. Manage fire to minimise woody thickening.

Photo: *© Adam Leidloff*

Northern Territory Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=177008

Last updated September 2008

Best practice management for VRD Black-Soil Ctenotus in the Northern Territory

- **Do not clear habitat**
- **Manage thickening**
- **Maintain ground layer**
- **Keep logs and litter**
- **Control pest animals**
- **Graze moderately & wet season spell**
- **Exclude stock from at least part of pastoral properties**
- **Manage fire**

Great Desert Skink

Egernia kintorei

What it looks like: The Great Desert Skink is a large, smooth bodied lizard with a long tail. It has a small, neat head and a red nose. Its scales are spangled with the yellows and reds found in desert sands. It can grow up to 44 cm long and weigh as much as 350 grams.

Where it lives: Great Desert Skinks live in spinifex grassland and shrubland on desert sandplains and adjacent swales, where they feed on insects and other small animals, leaves, flowers and fruit. Colonies of Great Desert Skinks dig and occupy complex burrow systems. This species is known only from the Australian arid zone. In the Northern Territory, it is found between Uluru-Kata Tjuta National Park and the Tanami Desert.

Importance as an indicator: Presence of healthy populations of Great Desert Skink is indicative of an environment in which fire is well managed and feral animals are under control. This relatively sedentary animal needs a mosaic of areas that have been recently burnt, in which to feed, and long unburnt, in which to shelter. Abandoned burrows have been reported in areas from which fire had been excluded for more than 15 years. Greater difficulty in finding food after fire, without nearby vegetation in which to seek shelter, also increases exposure to predators. Skinks are a favoured food of cats, and are also taken by foxes. Burrows may be colonised by rabbits to the exclusion of the skink.

Look after Great Desert Skink by managing fire and controlling rabbits and all introduced predators. Create a fine-grained mosaic of fire ages in which there are always some areas of unburnt vegetation. To do this, it may be necessary to burn small areas every year.

Photo: © Steve McAlpine

Northern Territory Status: Vulnerable
Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on McAlpin, S. 2001. The Recovery Plan for the Great Desert Skink (*Egernia kintorei*) 2001-2011. Arid Lands Environment Centre, Alice Springs.

Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=351205

Last updated September 2008

Best practice management for Great Desert Skink in the Northern Territory

- **Maintain ground layer**
- **Control pest animals**
- **Manage fire**

Arnhem Land Egernia

Egernia obiri

What it looks like: The Arnhem Land Egernia is a pale brown, slow-moving, stocky skink with a long tail. It has a small neat head with dark markings, short fat legs and a brown streak down the middle of its back.

Where it lives: The Arnhem Land Egernia lives in sandstone country, where it shelters in rock crevices through the day and comes out to feed on insects and other small animals as the sun goes down. This skink is found only in the Northern Territory, where it is known from a few places on the western Arnhem Land plateau and nearby sandstone outcrops.

Importance as an indicator: Persistence of Arnhem Land Egernia is likely to reflect well on the management of the country in which it lives. A patchy fire regime will promote the availability of the species on which it feeds. Populations of this skink may be adversely affected by introduced animals. Skinks are a favoured food of cats, so this sluggish species may be especially at risk. Even in a well managed environment, cane toads may compete for prey, leading to a reduction in numbers of Arnhem Land Egernia.

Look after Arnhem Land Egernia and other animals of the sandstone country by managing fire. Create an effective network of early dry season fires to prevent large scale fires later in the year, particularly where Egernia have been recorded. Control cat numbers with effective methods, such as shooting or baiting.

Photo: *© Martin Armstrong*

Northern Territory Status: Endangered
Australian Status: Endangered

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=177092

Last updated September 2008

Best practice management for Arnhem Land Egernia in the Northern Territory

- **Maintain ground layer**
- **Keep logs and litter**
- **Control pest animals**
- **Manage fire**

Slater's Egernia

Egernia slateri

What it looks like: Slater's Egernia is a speckled pinkish-brown and black skink no bigger than 10 cm long. Compared with other smooth-bodied skinks, it has a large head and short snout.

Where it lives: Slater's Egernia is a skink of riparian shrublands in arid ranges, where it shelters in burrows by day, and comes out to feed on insects and other small animals as the sun goes down. As with other skinks, it is likely that this species requires a mix of bare ground on which to feed and nearby shelter provided by low growing vegetation, leaves and litter. Though the species' distribution extends into South Australia, it appears that this subspecies is restricted to Northern Territory, where it is known only from four places close to Alice Springs.

Importance as an indicator: Healthy populations of Slater's Egernia reflect well on the management of the country in which they are found. Maintaining a healthy riparian corridor along drainage lines can be difficult, with invasion by Buffel Grass reducing habitat complexity. Not only does this exotic grass form a monoculture leaving little bare ground, the continuous fuel layer it provides ensures that any fires lit leave few patches of litter or vegetation for shelter. This exposes the skinks to predation by cats, which are particularly fond of skinks in their diet, and are also active at night.

Look after Slater's Egernia by keeping drainage lines clear of Buffel Grass. Control cat numbers with effective methods, such as shooting or baiting.

Photo: *© NRETA*

Northern Territory Status: Endangered
Australian Status: Endangered

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=351475

Last updated September 2008

Best practice management for Slater's Egernia in the Northern Territory

- **Maintain shrub layer**
- **Maintain ground layer**
- **Keep logs and litter**
- **Control pest animals**
- **Control weeds**
- **Manage fire**

Mertens' Water Monitor

Varanus mertensi

What it looks like: Mertens' Water Monitor is a medium to large goanna that can grow up to 1 metres long. It has a dark brown to black back and numerous small dark-edged cream or yellow spots. Its sideways flattened tail is well-adapted for swimming.

Where it lives: Mertens' Water Monitor has a broad geographic range, occupying coastal and inland waters across the far north of Australia from the Kimberley to the west side of Cape York Peninsula. In the Northern Territory it has been recorded across most of the Top End and the Gulf Region. This semi-aquatic monitor is seldom seen far from water.

Importance as an indicator: This species is found where it has access to abundant food - fish, frogs, carrion, insects and small terrestrial vertebrates - and can lay its eggs in a burrow in the ground, away from predators. It appears to have declined with the spread of cane toads, being particularly sensitive to the toad's toxin. Recovery of Mertens' Water Monitor populations from areas where it has declined indicates local adaptation to this exotic pest.

Look after Mertens' Water Monitor by controlling introduced pests. When travelling, check your load to make sure you do not transport toads to islands or beyond their current range. Prevent degradation of riparian areas to maintain habitat for prey.

Photo: *© Simon Ward*

Northern Territory Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=347295

Last updated September 2008

Best practice management for Mertens' Water Monitor in the Northern Territory

- **Control pest animals**
- **Protect wetland habitat**

Yellow-spotted Monitor

Varanus panoptes

What it looks like: The Yellow-spotted, or Floodplain, Monitor is a large goanna that can grow nearly one and a half metres long. It is dark brown with alternating bands of large black spots and smaller dark-edged yellow spots. It is paler underneath, often with lines of spots. Its tail is flattened sideways, narrow bands at the end making it appear lighter.

Where it lives: Yellow-spotted Monitors are found across the far north of Australia from the Kimberley to Cape York Peninsula, and southward through most of Queensland. In the Northern Territory, they have been recorded across most of the Top End and in the Gulf Region.

Importance as an indicator: This species is a generalist, occupying a variety of habitats, including coastal beaches, floodplains, grasslands and woodlands. It is found where there is an abundance of food, particularly small terrestrial vertebrates and insects, and it can lay its eggs in a burrow away from predators. It appears to have declined with the spread of cane toads, being particularly sensitive to the toad's toxin. Recovery of Yellow-spotted Monitor populations in some areas where it has declined indicates local adaptation to this exotic pest.

Look after Yellow-spotted Monitor by controlling introduced pests. When travelling, check your load to make sure you do not transport toads to islands or beyond their current range.

Photo: *© Alaric Fisher*

Northern Territory Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=347307

Last updated September 2008

Best practice management for Yellow-spotted Monitor in the Northern Territory

- **Control pest animals**
- **Protect wetland habitat**

Oenpelli Python

Morelia oenpelliensis

What it looks like: The Oenpelli Python is a large snake that can grow up to 4 metres long. It has dark olive-brown skin, patterned with darker blotches, except for its cream to dull yellow belly.

Where it lives: The Oenpelli Python lives in monsoon rainforest patches, riparian areas, woodlands, open heathlands and bare rock pavements. It shelters by day in cracks, caves, crevices or large shady trees, and emerges during the night to prey on medium-sized mammals, such as possums and wallabies. It is found only in the rugged broken sandstone escarpments and gorges of western Arnhem Land. Within this area, it has been reported from the upper catchments of the Cadell, South Alligator and East Alligator River systems.

Importance as an indicator: Top level predators, such as pythons, are a good indicator of ecosystem health. The Oenpelli Python is likely to be sensitive to the recent general decline of mammals across the Top End. The reasons for this decline are unclear. However, a change in fire regimes, combined with predation by cats, and possibly disease, are thought to negatively affect species diversity and abudance. The fire regimes across its range have changed to include a far higher incidence of extensive hot, late dry season fires, reducing habitat suitability for many mammals.

Look after Oenpelli Python by managing for a high habitat diversity that will ensure an abundance of prey. Establish a fire regime that maintains patches of both recently burnt and long-unburnt country. Minimise fire intensity to avoid damaging large trees. Keep feral animals, particularly cats, under control.

Photo: *© Ian Morris*

Northern Territory Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=176989

Last updated September 2008

Best practice management for Oenpelli Python in the Northern Territory

- **Protect rainforest habitat**
- **Maintain tree cover**
- **Maintain tree hollows**
- **Keep logs and litter**
- **Control pest animals**
- **Manage fire**
- **Do not collect from the wild**

Emu

Dromaius novaehollandiae

What it looks like: Emus are huge flightless birds with long legs and necks. They can grow to nearly 2 metres tall. Their shaggy plumage can vary in colour from pale greyish brown to greyish buff with black spots. Young Emus are striped dark brown over a buff-coloured down.

Where it lives: The Emu is a widespread species, found throughout continental Australia. Emus can be seen through most of the Northern Territory, though more rarely in the dry desert regions. They occur at low densities through most of the Top End woodlands, where they are relatively sedentary. Further south, they move large distances seeking food and water.

Importance as an indicator: Emus are omnivorous, taking seeds, fruits, insects and shoots of plants, so are indicative of a healthy and diverse environment. They make unprotected nests on the ground, so may be easily disturbed by predators and fire. Emus flourish where the males can safely incubate the eggs, and where the chicks can find enough food.

Look after Emu by managing fire and predators. Burn a network of protective fires in the early dry season that ensure Emus have access to unburnt areas in which to nest. Manage harvesting pressure, so that neither eggs nor adults are taken at unsustainable levels.

Photo: *© Martin Armstrong*

Northern Territory Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=176363

Last updated September 2008

Best practice management for Emu in the Northern Territory

- **Maintain shrub layer**
- **Manage fire**
- **Limit harvest to sustainable levels**

Malleefowl

Leipoa ocellata

What it looks like: The Malleefowl is a large bird, with a long tail that stands erect on sturdy, long legs. Its plumage is mottled grey, white, black and reddish-brown, except for its white breast and belly.

Where it lives: Malleefowl live in semi-arid areas dominated by mallee eucalypts or shrubby heath. There the male builds a large mound of leaves, dirt and sticks, in which it hopes a female will lay her eggs. He guards this mound and the country around it from other Malleefowl males. According to both Aboriginal knowledge and scientific records, the Malleefowl's distribution in the Northern Territory has declined, and there have been no recent records. Previous records were from the south-west of the Territory.

Importance as an indicator: The decline of the Malleefowl is a signal that all is not well in arid land environments. While the ultimate cause has not been established, this species faces a range of pressures that together or alone could be responsible for its demise. Predation by cats and foxes, hunting by humans and altered fire regimes that result in widespread and intense fires have all been postulated as likely suspects.

Look after Malleefowl and other arid land species by managing fire and feral animals. Establish a patchwork of recently burnt and long unburnt areas. Control cats and foxes, which have had a significant impact on native arid land animals.

Photo: *© Graeme Chapman*

Northern Territory Status: Critically Endangered
Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=351805

Last updated September 2008

Best practice management for Malleefowl in the Northern Territory

- **Control pest animals**
- **Manage fire**

Partridge Pigeon

Geophaps smithii

What it looks like: The Partridge Pigeon is a ground-dwelling bird, more likely to scurry away than fly when disturbed, but will sometimes eject from the grass in alarm. Mostly greyish-brown, they sport distinctive red eye rings and white cheeks, and their wings have both an iridescent green speculum and a white shoulder.

Where it lives: Partridge Pigeons live in lowland eucalypt open forests and woodlands that have grassy understoreys, where they nest on the ground, and feed on fallen seeds between grass tussocks. Partridge Pigeons are found across the Top End of the Northern Territory and in Western Australia's Kimberley region. Unfortunately, they have declined or disappeared from much of the lower rainfall parts of this range over the last century, and are rarely seen in eastern and central Arnhem Land.

Importance as an indicator: These ground-dwelling birds are highly susceptible to predation by feral cats. Reliant on ground cover for protection and food production, they are also affected by overgrazing or fires that reduce ground cover or seed availability. These largely sedentary birds therefore only persist where fire, grazing and feral animals are well managed.

Look after Partridge Pigeon by developing a patchy fire mosaic that prevents too large an area being burnt in any one year. Control introduced grasses, such as Gamba Grass and Mission Grass, which overcrowd the species' feeding habitat and increase the risk of extensive, high intensity fires. Control feral animals, particularly cats. On grazing lands, make sure some areas are free from stock at all times, and allow significant areas of grasses to seed in the early wet.

Photo: *© Martin Armstrong*

Northern Territory Status: Vulnerable
Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=176384

Last updated September 2008

Best practice management for Partridge Pigeon in the Northern Territory

- **Do not clear habitat**
- **Maintain ground layer**
- **Control pest animals**
- **Control weeds**
- **Graze moderately & wet season spell**
- **Exclude stock from at least part of pastoral properties**
- **Manage fire**

Christmas Island Frigatebird

Fregata andrewsi

What it looks like: The male Christmas Island Frigate Birds is a glossy-black bird with long deeply forked tails and wonderfully garish red throats that it puffs out in display. His underparts have white streaks that distinguish him from other species of Frigate Bird. Females are less demonstrative, with no red throat.

Where it lives: Christmas Island Frigate Birds feed on the wing, often by harrying other seabirds until they drop their hard-earned catch. Otherwise they may deign to catch their own fish or squid. They nest in tall trees on Christmas Island and disperse from there to forage in the nearby Indian Ocean. They are only known to have ventured as far as Northern Territory waters after Cyclone Tracy.

Importance as an indicator: Always on the lookout for an easy feed, Frigate Birds have been known to get ensnared on longline fishing hooks. In the long run, they may also be affected by overfishing of their preferred prey. So their survival is a reflection of fishing practices. However, the Christmas Island species is also subject to terrestrial issues, its numbers being adversely affected by the clearance of its habitat on Christmas Island. The possibility of burgeoning Crazy Ant populations devastating nestling birds has been averted by preventative control measures poisoning ant nests across the island.

Look after Christmas Island Frigatebird by implementing sustainable fishing practices, and reducing the risk of birds becoming ensnared by longlines. Habitat retention and Crazy Ant control are important on Christmas Island.

Photo: *© Jeff Blincow*[†]

Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=449433

Last updated September 2008

Best practice management for Christmas Island Frigatebird in the Northern Territory

- **Manage fisheries sustainably**
- **Adapt longline equipment to reduce seabird bycatch**

Red Goshawk

Erythrotriorchis radiatus

What it looks like: Red Goshawks are streaky reddish-brown birds, with yellow legs. They are slightly smaller but heavier-looking than Black Kites. A Red Goshawk looks six-fingered as it flies over the canopy with a mixture of flapping and gliding.

Where it lives: Red Goshawks live in tall forests and woodlands from northern NSW to Cape York, and across the north to the Kimberley. They are particularly abundant on the Tiwi Islands They build large stick nests in tall trees, often along rivers, and hunt for birds, including kookaburras and cockatoos, in nearby open forests or wetlands.

Importance as an indicator: Presence of Red Goshawks shows that high quality vegetation has been retained along river corridors, and the open-structure of adjoining forests and woodlands has been maintained. Vegetation clearance has almost eliminated Red Goshawks from the southeast of their range, and so clearance of native vegetation on the Tiwi Islands is a concern, particularly if this disrupts fire management. Egg-collection and shooting have also been identified as problems in the Northern Territory.

Look after Red Goshawk by protecting nesting habitat with fire breaks burnt early in the dry season. Control weeds that invade the riparian zone and increase fire hazard. Avoid clearing native vegetation, but, where this is not possible, make sure adequate habitat is retained, especially around known nest sites.

Photo: *© Ian Morris*

Northern Territory Status: Vulnerable
Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=176391

Last updated September 2008

Best practice management for Red Goshawk in the Northern Territory

- **Do not clear habitat**
- **Maintain tree cover**
- **Control weeds**
- **Manage fire**

Australian Bustard

Ardeotis australis

What it looks like: Australian Bustards are tall birds usually seen singly or in small groups. They have a brown body and black cap. Males puff out their long white necks in breeding displays. Females are smaller and greyer. Reluctant to fly, bustards usually scurry away when disturbed.

Where it lives: Australian Bustards were once found throughout Australia, but have now disappeared from the south-east of the country and are at risk elsewhere. They prefer open country, either grassland or woodland, where they feed on insects, other small animals, seeds and fruits.

Importance as an indicator: Australian Bustards are culturally and spiritually significant to Aboriginal people, and prized as bush tucker. Their presence is an indicator of well-managed country that has not thickened as a result of over grazing or lack of fire, and is not overrun by predators. As ground nesters, they are particularly vulnerable to fire in the nesting season. Their presence also indicates healthy populations of insects and small animals. Bustards only persist where hunting pressure is not unreasonably high.

Look after Australian Bustard by not overgrazing, and ensure country subject to vegetation thickening is regularly burnt at the start of the rainy season. As bustards nest at this time of the year, be careful not to burn in currently occupied areas. Burn a network of breaks around areas targeted for storm burning early in the year, but exclude cattle from the regrowth in order to avoid vegetation thickening. Control introduced predators, especially foxes. Limit hunting pressure, especially during the breeding season. Avoid pesticide use wherever possible.

Photo: *© Mark Ziembicki*

Northern Territory Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=176354

Last updated September 2008

Best practice management for Australian Bustard in the Northern Territory

- **Manage thickening**
- **Maintain ground layer**
- **Control pest animals**
- **Graze moderately & periodically spell country from grazing**
- **Manage fire**
- **Limit harvest to sustainable levels**
- **Limit pesticide use**

Plains-wanderer *Pedionomus torquatus*

What it looks like: The Plains-wanderer is a small, speckled bird that spends most of its life on the ground. It is slimmer than most quails, and has a finer, yellow bill and far longer yellow legs. Hard to find, Plains-wanderers are most often seen walking alone, in pairs or family parties. Both males and females are mottled brown and paler on the belly, but only females have the conspicuous white-spotted black collar and a rufous breast.

Where it lives: Plains-wanderers live in sparse low grasslands, where they shelter in the more dense patches, and feed by day taking seeds and invertebrates from patches of bare ground. They also nest on the ground. The stronghold of the Plains-wanderer is in the Riverina region of south-eastern Australia, but the species has also been recorded in South Australia and inland Queensland. Despite a single record, their occurrence in the Northern Territory is yet to be confirmed.

Importance as an indicator: Presence of permanent populations of Plains-Wanderer indicates a sparse grassland, little disturbed by grazing animals or cultivation.

Look after Plains-wanderer by controlling potential predators, notably cats and foxes, and protecting the habitat from cultivation, overgrazing, weed growth and extensive wildfires. Consider alternatives to the use of pesticides.

Photo: © *Bruce Mullins*

Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=247093

Last updated September 2008

Best practice management for Plains-wanderer in the Northern Territory

- **Maintain ground layer**
- **Keep logs and litter**
- **Control pest animals**
- **Control weeds**
- **Graze moderately & periodically spell country from grazing**
- **Limit pesticide use**

Australian Painted Snipe

Rostratula australis

What it looks like: The Australian Painted Snipe is a shorebird that stands about 20 cm high and wears a distinctive black and white, rugby jumper V on its chest and a bold white stripe through its eye. Otherwise its plumage on its upper body is mostly chestnut-bronze to dark olive-green, with fine black barring and chestnuts spots, contrasting with its clean white legs and belly.

Where it lives: In northern Australia, Australian Painted Snipe are seen on shallow, grassy, freshwater swamps, claypans and seasonally flooded grasslands, where they feed at the water's edge on seeds and invertebrates, and nest in a shallow scrape in the grass. Most records come from south-eastern Australia. In the Northern Territory, most suitable habitat occurs on pastoral land. The scattered nature of this habitat and the low detectability of the species in well-grassed areas means it is possible that Australian Painted Snipe occurs more widely across the north than records suggest.

Importance as an indicator: Presence of Australian Painted Snipe is a good indication of wetland health. The species is unlikely to persist in areas that have been dug over, trampled or heavily grazed or invaded by shrubby weeds. They are also sensitive to changes in hydrology and salinity of their wetland habitat.

Look after Australian Painted Snipe by keeping pigs, buffalo, cattle and horses away from at least a small number of grassy swamps on each property, using combinations of fencing, spelling and pest animal control. Control voracious wetland weeds, especially shrubby weeds, such as Prickly Mimosa (*Mimosa pigra*). Do not interfere with the hydrology of wetlands, manage water extraction carefully and avoid actions that will increase water salinity.

Photo: *© Tom Tarrant*

Northern Territory Status: Vulnerable
Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=246428

Last updated September 2008

Best practice management for Australian Painted Snipe in the Northern Territory

- **Maintain ground layer**
- **Control pest animals**
- **Control weeds**
- **Graze moderately & wet season spell**
- **Fence key habitat**
- **Manage water extraction sustainably**
- **Protect wetland habitat**

Princess Parrot

Polytelis alexandrae

What it looks like: The Princess Parrot is a slender bird with a small head and long tail. It has olive-green plumage, a blue-grey crown, pink bib and a small, reddish bill. It is most often seen in large flocks.

Where it lives: Princess Parrots live in arid environments, possibly persisting in an area only as long as seed, water and nest sites are available. They are associated with open Eucalypt woodland in sand dune country, where there is a shrubby understorey of Cassia (*Chamaecrista*), Emu-bush (*Eremophila*) and Beefwood (*Grevillea* and *Hakea*). They feed on seeds of grasses and shrubs, as well as flowers, nectar and leaves, and nest in hollows in large Eucalypts. It is unclear whether this highly nomadic parrot is resident in the Northern Territory, where it has been reported from between the Tanami Desert and Alice Springs.

Importance as an indicator: Although its nomadic behaviour means it will not always occupy an area, the Princess Parrot may return to well-managed country in response to favourable climatic conditions.

Look after Princess Parrot in currently or previously occupied areas by protecting and encouraging the elements essential to its survival. Manage seed resources by spelling country from heavy grazing by domestic and feral animals and developing a patchy fire regime that means some country is always producing seed. Limit fire intensity in order to protect nest hollows. Fencing waterholes and providing stock with off-site waterpoints will help avoid overgrazing of the parrots' habitat, but it is important that unused water is returned to ephemeral waterholes. Do not collect birds or eggs from the wild.

Photo: *© Kay Kessing*

Northern Territory Status: Vulnerable
Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=247138

Last updated September 2008

Best practice management for Princess Parrot in the Northern Territory

- **Maintain tree cover**
- **Maintain tree hollows**
- **Maintain shrub layer**
- **Maintain ground layer**
- **Control pest animals**
- **Graze moderately & periodically spell country from grazing**
- **Manage fire**
- **Do not collect from the wild**

Night Parrot

Pezoporus occidentalis

What it looks like: Those who have seen Night Parrots describe them as looking like large, fat, speckled Budgies, sitting on the ground sheltering near spinifex.

Where it lives: The Night Parrot is a bird of the arid zone, associated with spinifex grasslands, in stony or sandy areas and samphire and chenopod associations on floodplains, salt lakes and clay pans. Night Parrots nest and shelter in spinifex clumps by day, and emerge at night to forage on the ground, taking mainly seeds. Known records of the species are restricted to arid and semi-arid Australia. All Northern Territory sightings were from near Alice Springs or further south, and there have been no records since the 1920s. The most recent reports have been from Mitchell Grass Downs in Queensland and the Pilbara in Western Australia.

Importance as an indicator: The fleeting appearances of Night Parrots suggest they are highly nomadic. Nevertheless, their decline indicates a deterioration in conditions through the former range of this species. Food and shelter may have been adversely affected by grazing or changed fire regimes, and survival reduced through increased predation. Confirmed sightings of Night Parrots may indicate either good local conditions, or random events.

Look after Night Parrot and other ground nesting birds by controlling cats and foxes. Manage fire to maintain habitat suitability. Burn small patches of spinifex each year to prevent all the spinifex in an area going up in a single fire. Seed production may be enhanced by periodic fire, and the fire protection provided by patch-burning will preserve nesting and sheltering habitat. Do not allow spinifex to be overgrazed or replaced by Buffel Grass. Strategically place fences and waterpoints to ensure some parts of pastoral properties remain ungrazed.

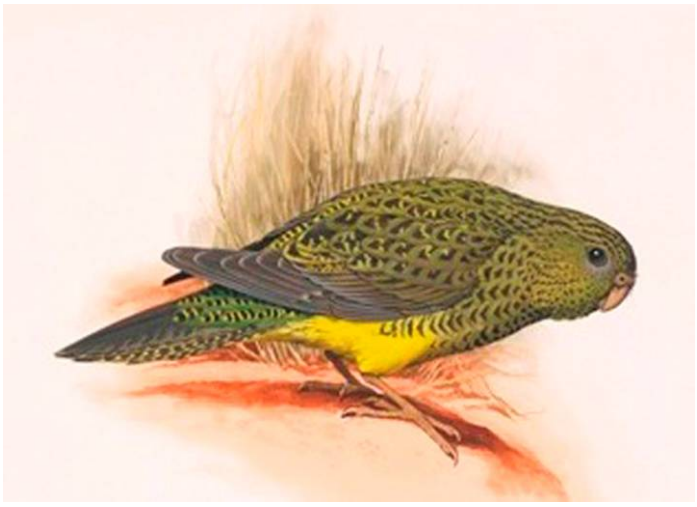


Illustration: *© W.T. Cooper*

Northern Territory Status: Critically Endangered
Australian Status: Endangered

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=247103

Last updated September 2008

Best practice management for Night Parrot in the Northern Territory

- **Control pest animals**
- **Graze moderately & periodically spell country from grazing**
- **Exclude stock from at least part of pastoral properties**
- **Manage fire**

Masked Owl (Tiwi Islands) *Tyto novaehollandiae melvillensis*

What it looks like: The Masked Owl is a large, speckled bird with big, dark eyes and a narrow pointed bill set in a pale, flat, heart-shaped face. Its chest and belly are white or chestnut, and its back and wings are dark grey to brown. It has strong-clawed, well-feathered legs. It calls with a combination of loud shrieks and whistles.

Where it lives: Masked Owls are forest birds. They roost by day in large tree or tree hollows, and emerge on dusk to feed on small mammals and birds. They prefer to feed on the edges of open areas. The subspecies of Masked Owl that is found only on the Tiwi Islands nests and roosts in tall eucalypt forest or rainforest, and feeds mostly in grasslands and other treeless vegetation.

Importance as an indicator: Persistence of the Tiwi Islands Masked Owl indicates a diverse environment, with both intact forests and nearby open areas, as well as an abundance of suitable prey. Conversion of this vegetation to dense Hickory Wattle (*Acacia mangium*) plantations poses a significant threat to this subspecies.

Look after Masked Owl (Tiwi Islands) by not clearing the forests in which it is found. Equally important are maintenance of open feeding areas and healthy small mammal populations. All these needs benefit from good fire management. Establish a network of recently burnt and long unburnt areas to reduce the incidence of extensive late dry season fires. Light small fires early in the dry season when moist fuels minimise the risk of fires spreading beyond target areas. Fires lit after the first wet season storms can be used to maintain a grassy understorey. Control weeds (such as Mission Grass), which both increase fire hazard and obstruct feeding.

Photo: *© Deane P Lewis*

Northern Territory Status: Endangered
Australian Status: Endangered

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=594596

Last updated September 2008

Best practice management for Masked Owl (Tiwi Islands) in the Northern Territory

- **Do not clear habitat**
- **Protect rainforest habitat**
- **Maintain tree cover**
- **Maintain tree hollows**
- **Manage thickening**
- **Control weeds**
- **Manage fire**

Masked Owl (northern mainland) *Tyto novaehollandiae kimberli*

What it looks like: The Masked Owl is a large, speckled bird with big, dark eyes and a narrow pointed bill set in a pale, flat, heart-shaped face. Its chest and belly are white or chestnut, and its back and wings are dark grey to brown. It has strong-clawed, well-feathered legs. It calls with a combination of loud shrieks and whistles.

Where it lives: Masked Owls are forest birds. They roost by day in large trees or tree hollows, and emerge on dusk to feed on small mammals and birds. They prefer to feed on the edges of open areas. The northern mainland subspecies of Masked Owl is found at scattered, sub-coastal locations between Broome and Townsville. Reporting rates of this subspecies have declined over the last decade or more.

Importance as an indicator: Persistence of the northern mainland subspecies of Masked Owl indicates a diverse environment, with both intact forests and nearby open areas, as well as an abundance of suitable prey. The owl is less common than its apparently suitable habitat, suggesting prey abundance and or competition with other large owls may be a limiting factor.

Look after Masked Owl (northern mainland) by not clearing the forests in which it is found. Equally important are maintenance of open feeding areas and healthy small mammal populations. All these needs benefit from good fire management. Establish a network of recently burnt and long unburnt areas to reduce the incidence of extensive late dry season fires. Light small fires early in the dry season when moist fuels minimise the risk of fires spreading beyond target areas. Fires lit after the first wet season storms can be used to maintain a grassy understorey. Control weeds (such as Mission Grass), which both increase fire hazard and obstruct feeding.

Photo: *© Deane P Lewis*

Northern Territory Status: Vulnerable
Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=594609

Last updated September 2008

Best practice management for Masked Owl (northern mainland) in the Northern Territory

- **Do not clear habitat**
- **Maintain tree cover**
- **Maintain tree hollows**
- **Control weeds**
- **Manage fire**
- **Report new populations**
- **More information is needed about this species**

Purple-crowned Fairy-wren (western) *Malurus coronatus coronatus*

What it looks like: In breeding plumage, the male Purple-crowned Fairy-wren seems to glare from behind his black bandit mask. His attitude is slightly discredited by his pretty lilac crown. Females, with their grey crowns and timid brown and white eye-wear, seem softer still. Both sport clean white bibs and hold erect slightly bleached blue tails.

Where it lives: Purple-crowned Fairy-wrens live in small family parties along well-watered streams and rivers. They prefer areas of thick vegetation where cane grasses and/or Pandanus dominate, but can also be found in dense patches of shrubs. This subspecies occurs from the Victoria River catchment in the Northern Territory, west to the north Kimberley, in Western Australia.

Importance as an indicator: Purple-crowned Fairy-wrens are good indicators of riparian condition, so sensitive are they to habitat degradation or loss. Livestock seeking water eat and trample riparian vegetation, and intense fires can destroy the cover they need. Other concerns include predation by cats and black rats, and invasion of weeds that transform waterways, such as Noogoora Burr (*Xanthium* sp.).

Look after Purple-crowned Fairy-wren (western) by restricting access of feral animals and livestock to waterways. Fence waterholes to exclude both domestic and feral animals. Providing stock with off-site waterpoints will help avoid overgrazing of the Fairy-wren's habitat, but it is important that unused water is returned to ephemeral waterholes. Burn breaks close to the river banks early in the dry season to prevent later fire incursions.

Photo: © Graeme Chapman

Northern Territory Status: Vulnerable
Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=180294

Last updated September 2008

Best practice management for Purple-crowned Fairy-wren (western) in the Northern Territory

- **Maintain ground layer**
- **Control pest animals**
- **Control weeds**
- **Fence key habitat**
- **Manage fire**
- **Manage water extraction sustainably**
- **Protect wetland habitat**

White-throated Grasswren *Amytornis woodwardi*

What it looks like: The White-throated Grasswren is a small, perky bird with an erect tail, and prominent white throat. Its black plumage is streaked with white feathers, and its belly, rump and tail are all chestnut brown. Its presence is usually signalled by its call, a mix of complex trills and chirps.

Where it lives: White-throated Grasswrens live in spinifex clumps amongst sandstone boulders, where they feed on invertebrates, seeds and other plant matter. Patches of suitable habitat occur in western Arnhem Land, and as far south-west as Nitmiluk National Park and north-east as the Mann River.

Importance as an indicator: Healthy populations of White-throated Grasswrens are indicative of a well-managed fire regime, as this species appears to be sensitive to both too extensive and too frequent fire. As fire reduce the cover and nesting habitat provided by large spinifex clumps, it is important for significant areas to remain unburnt for a number of years. However, total fire exclusion may result in spinifex clumps being replaced by unsuitable shrubbery.

Look after White-throated Grasswren and other fire sensitive species by implementing a fire regime that ensures large areas of habitat remain unburnt for several years. In order to do this, establish a network of patchy fires, lighting them only when mild weather conditions and adequate breaks in the fuel layer allow their containment to the target area.

Photo: © Graeme Chapman

Northern Territory Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Noske R. 1992. The status and ecology of the white-throated grasswren *Amytornis woodwardi*. *Emu* 92, 39-51.

Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=176398

Last updated September 2008

Best practice management for White-throated Grasswren in the Northern Territory

- **Maintain ground layer**
- **Manage fire**

Carpentarian Grasswren

Amytornis dorotheae

What it looks like: The Carpentarian Grasswren is a small, perky bird that struts around, prominently displaying its white throat. Its rich rusty-brown plumage is streaked with white feathers. Despite a bold demeanour, it may choose not to reveal itself, even in its regular haunts.

Where it lives: Carpentarian Grasswrens are found only in association with sandstone outcrops south and west of the Gulf of Carpentaria. There, they rely on mature stands of spinifex, in which to nest and forage for seeds and insects. In the Northern Territory, they have been recorded between Nathan River Station and the Queensland border, but are becoming increasingly scarce. They appear more secure on the other side of the border.

Importance as an indicator: Persistence of Carpentarian Grasswrens indicates a well managed landscape, where fires are patchy and infrequent. Extensive fires may lead to local extinctions.

Look after Carpentarian Grasswren and the spinifex country in which it lives by managing fire. Introduce a fire regime that ensures a mosaic of habitats burnt at different times, with most areas being burnt no more frequently than every three to five years. To do this, small areas may need to be burnt most years in order to create breaks in the fuel load. Fires should only be lit under mild weather conditions, when extent of burn can be controlled.

Photo: *© Graeme Chapman*

Northern Territory Status: Endangered

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=176933

Last updated September 2008

Best practice management for Carpentarian Grasswren in the Northern Territory

- **Maintain ground layer**
- **Manage fire**

Thick-billed Grasswren

Amytornis textilis

What it looks like: This demure, but plucky-looking bird is mostly dull brown in colour. It has plumage that is paler underneath than above, and camouflaged by white streaks, holds its tail erect in display. Its heavy bill is well-adapted for turning over stones in search of food.

Where it lives: Thick-billed Grasswrens are birds of arid environments, where they live in saltbush and bluebush shrublands. Within this habitat, they are found along drainage lines in run-on areas. Suitable habitat is mostly found in the northern part of South Australia, but extends into the southern part of the Northern Territory, where a small population occurs near Charlotte Waters.

Importance as an indicator: Thick-billed Grasswrens are considered good indicators of environmental health as they have been shown to be sensitive to overgrazing by domestic and feral animals, introduced predators and poorly managed fire regimes.

Look after Thick-billed Grasswren by minimising grazing pressure, particularly in times of drought. Control cats, which have caused the extinction of island populations of this species. Establish a patchy fire regime that provides both areas of recently burnt and long unburnt country in close proximity.

Photo: © Graeme Chapman

Northern Territory Status: Endangered
Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on NPWS 2002. Thick-billed Grasswren (eastern subspecies) *Amytornis textilis modestus* (North, 1902) Recovery Plan. NSW NPWS, Hurstville.

Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=352115

Last updated September 2008

Best practice management for Thick-billed Grasswren in the Northern Territory

- **Maintain shrub layer**
- **Control pest animals**
- **Graze moderately & periodically spell country from grazing**
- **Manage fire**

Yellow Chat (Alligator Rivers) *Epthianura crocea tunneyi*

What it looks like: The Yellow Chat is a small, bright golden-yellow bird, if it is a male, and pale lemon yellow, if it is a female. Only the male wears a black chest band.

Where it lives: Yellow Chats live on alluvial floodplains and marine plains, where they forage in small groups, taking insects from patches of dense grass or low shrubs. Their numbers concentrate around receding wet areas as the dry season progresses. Yellow Chats occur patchily through suitable habitat across northern Australia. However, subspecies found in the Top End floodplains of the Alligator and Adelaide River systems, notably at Harrison Dam, occurs nowhere else in the world.

Importance as an indicator: Sensitive to most forms of disturbance, Yellow Chats are flagstone species indicating the health of riverine floodplains. Maintaining habitat suitability for Yellow Chats in the Top End will be an increasing challenge, threatened as it is by transformer weeds, buffalo and cattle grazing, wallowing and rooting by pigs, saltwater intrusion and altered fire regimes. Feral cats may also affect the species.

Look after Yellow Chat (Alligator Rivers) by ridding the Top End floodplains of Prickly Mimosa, Para Grass and other aggressive weeds, and keeping feral buffalo and cattle numbers under control. Avoid activities that accelerate saltwater intrusion or unsustainably increase water extraction. The vegetation of these floodplains may benefit from reinstating traditional methods of progressively burning patches as the waters recede and the soils dry out.

Photo: *© Martin Armstrong*

Northern Territory Status: Endangered
Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=177042

Last updated September 2008

Best practice management for Yellow Chat (Alligator Rivers) in the Northern Territory

- **Maintain shrub layer**
- **Maintain ground layer**
- **Control pest animals**
- **Control weeds**
- **Manage fire**
- **Protect wetland habitat**

Crested Shrike-tit (northern) *Falcunculus frontatus whitei*

What it looks like: The Crested Shrike-tit is a chunky little bird with striking black and white markings on its head, grey-green back and wings, and a lemon breast. It has a short, strong beak, which is hooked at the tip.

Where it lives: The northern subspecies of Crested Shrike-tit has been recorded at widely scattered locations between the south-west Kimberley and Borroloola. Most recent records from the Northern Territory have been from just north of Mataranka. In contrast to its eastern counterpart, this subspecies of Crested Shrike-tit lives in dry eucalypt forests and woodlands, where it feeds in the canopy, taking spiders, cicadas, and other large insects from under bark or in decaying branches. It also nests high in the canopy, where its substantial cup nest may be exposed to aerial predators.

Importance as an indicator: The presence of Crested Shrike-tits indicates a productive forest or woodland, where the canopy and the insects living in the canopy have not been adversely impacted by fire.

Look after Crested Shrike-tit (northern) by not clearing the forests and woodlands in which it lives, as it is unlikely to survive the loss of habitat. Minimise intense fires that may destroy nesting habitat and, by scorching the reduce the abundance of food. To do this, burn a network of firebreaks early in the dry season. Protect the habitat from invasion by introduced grasses, such as Gamba Grass, that are likely to increase fuel loads.

Photo: © NRETA

Northern Territory Status: Vulnerable
Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=176377

Last updated September 2008

Best practice management for Crested Shrike-tit (northern) in the Northern Territory

- **Do not clear habitat**
- **Maintain tree cover**
- **Control weeds**
- **Manage fire**

Grey Currawong

Strepera versicolor plumbea

What it looks like: The Grey Currawong is a large, dark grey bird with a long, pointed bill and piercing yellow eyes. It has white markings on its wings and a broad white band on the end of its tail.

Where it lives: Small family groups of the western subspecies of Grey Currawong are found scattered through south-western Australia. They have been recorded in the far south-west of the Northern Territory, and the far north-west of South Australia. They are presumed to be extinct in South Australia, but surveys are needed to determine if they persist in the Northern Territory. The Grey Currawong is considered a forest-edge species, feeding in open areas and nesting in tall vegetation. Records from the Northern Territory have been from tall acacia and river red gum woodland in the foothills of the central ranges. The species feeds on skinks and insects taken from the ground, but will also feed in trees, taking fruit and nestlings.

Importance as an indicator: Persistence of the Grey Currawong in the Northern Territory may reflect habitat availability and condition, particularly availability of prey and abundance of predators.

Look after Grey Currawong and other ground-feeding animals by controlling potential predators, notably cats and foxes. Maintain a diverse ground layer of grasses, herbs and leaf litter by avoiding overgrazing or extensive fires. This will provide habitat for rich skink and insect populations. Make breaks in the fuel load by burning small patches of country when the opportunity arises, particularly after good rains.

Photo: *© Graeme Chapman*

Northern Territory Status: Critically Endangered

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=353273

Last updated September 2008

Best practice management for Grey Currawong in the Northern Territory

- **Maintain tree cover**
- **Maintain ground layer**
- **Keep logs and litter**
- **Control pest animals**
- **Graze moderately & periodically spell country from grazing**
- **Manage fire**

Hooded Robin (Tiwi Islands) *Melanodryas cucullata melvillensis*

What it looks like: The male Hooded Robin is a striking black and white bird. While its head is pure black and its belly pure white, its tail, wings and back are a combination. Female and young birds are largely a soft grey-brown, but still have striped black and white wings.

Where it lives: This Hooded Robin subspecies was last recorded on the Tiwi Islands in 1992. On the mainland Hooded Robins live in eucalypt tall open forests, woodlands and Acacia thickets, where they perch quietly on tree branches or trunks, waiting to pounce on invertebrate prey on the ground. On the Tiwi Islands, they were also reported from treeless plains.

Importance as an indicator: Decline of the Tiwi Islands Hooded Robin indicates poor habitat condition, probably caused by a change in fire regime. Regularly visited areas are being burnt by large, hot fires. Conversely, remote areas are burnt infrequently, leading to increased grass cover and reduced foraging efficiency. Conversion of large areas of eucalypt open forest to exotic plantations may affect any remaining birds. Elsewhere declines have been linked to predation by feral cats, vegetation clearance or thinning, and changes in the abundance of some prey species. Hooded Robin's sensitivity to grazing is indicated by their abundance being reduced within 4 km of waterpoints.

Look after Hooded Robin (Tiwi Islands) by not clearing or thinning vegetation where this species is known to occur. Reinstate a patchy fire regime that provides areas of recently burnt and long unburnt forests in close proximity. On pastoral properties, make sure some areas are left ungrazed by judicious use of fencing and waterpoints. Further reduce grazing pressure by controlling feral animals, such as buffalo, pigs, goats and wild cattle and horses. Control cats using effective methods, such as shooting or baiting.

Photo: *© Graeme Chapman*

Northern Territory Status: Endangered
Australian Status: Endangered

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=177174

Last updated September 2008

Best practice management for Hooded Robin (Tiwi Islands) in the Northern Territory

- **Do not clear habitat**
- **Maintain tree cover**
- **Maintain ground layer**
- **Control pest animals**
- **Exclude stock from at least part of pastoral properties**
- **Manage fire**

Gouldian Finch

Erythrura gouldiae

What it looks like: Male Gouldian Finches are small multi-coloured birds with black or red heads, violet breasts and yellow bellies. Females and young birds are mostly green. Gouldian Finches are found in small or large flocks, often with other finch species, and can most easily be seen at waterholes.

Where it lives: Gouldian Finches nest in hollows in white gum trees, and feed on grass seeds, relying on perennial grasses through the early wet season and annual grasses the rest of the year. Though once more common throughout northern Australia, they are now known to nest at a small number of isolated locations, mostly within the Northern Territory and the Kimberley. The largest known population is in the Yinberrie Hills.

Importance as an indicator: Presence of nesting Gouldian Finches indicates a healthy environment with an abundance of seeding perennial grasses that have not been overgrazed by cattle or feral pigs, and where fire has been well-managed. Airsac mite has been identified as a threat to this species in the past, but its current incidence is unknown. Trapping is also a threat that was more significant before the species was well established in captivity.

Look after Gouldian Finch by patch-burning in the early dry season to break up the fuel load and prevent extensive late dry season fires. Storm-burn small patches of perennial grasses to extend the availability of high quality seeds in the wet season. Control weeds, such as Gamba Grass, that modify feeding habitat and increase fire hazard. Control pigs, which dig up and destroy clumps of Cockatoo Grass, and spell areas of perennial grasses periodically in the wet season to allow them to recover vigour and produce seed.

Photo: © Steve Murphy & AWC

Northern Territory Status: Endangered
Australian Status: Endangered

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=176370

Last updated September 2008

Best practice management for Gouldian Finch in the Northern Territory

- **Maintain tree cover**
- **Maintain tree hollows**
- **Maintain ground layer**
- **Control pest animals**
- **Control weeds**
- **Graze moderately & wet season spell**
- **Manage fire**
- **Do not collect from the wild**
- **Investigate/manage disease**

Brush-tailed Mulgara

Dasycercus blythi

What it looks like: The Brush-tailed Mulgara is a largish carnivorous pinkish-brown marsupial, with a white belly and chin, and a dark brown tail. Males are significantly larger than females. It is one of several desert marsupials that stores fat in its plump tail.

Where it lives: Brush-tailed Mulgara are mostly found in mature spinifex grasslands, where they feed on insects and other small animals at night. During the day, they shelter in burrows in the ground. In the Northern Territory Brush-tailed Mulgara are found at scattered locations from the Simpson Desert in the south to the Tanami Desert in the north.

Importance as an indicator: Presence of Mulgara in spinifex grassland indicates a healthy environment in which fire is well managed, grazing is at sustainable levels, and predator numbers are under control.

Look after Brush-tailed Mulgara and other species dependent on mature spinifex by managing fire. Introduce a fire regime that ensures a mosaic of habitats burnt at different times, with no areas being burnt more frequently than every three to five years. To do this, some areas will need to be burnt most years in order to create breaks in the fuel load. Fires should only be lit under mild weather conditions, when extent of burn can be controlled. Discourage Buffel Grass, which increases fire hazard by filling in bare patches between spinifex clumps. Spell some country from grazing each year to allow spinifex to mature into large clumps.

Photo: © NRETA

Northern Territory Status: Vulnerable
Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=347244

Last updated September 2008

Best practice management for Brush-tailed Mulgara in the Northern Territory

- **Maintain ground layer**
- **Control pest animals**
- **Control weeds**
- **Graze moderately & periodically spell country from grazing**
- **Manage fire**

Crest-tailed Mulgara (Ampurta) *Dasycercus hillieri*

What it looks like: The Crest-tailed Mulgara, also known as the Ampurta, is a stocky, short-legged marsupial with small ears and a pointed snout. Except for the black brush at the end of its tail and its dark eyes, it is pale fawn. It can grow to about 30 cm long, including its tail, which is about one third of its total length.

Where it lives: Crest-tailed Mulgaras are arid zone animals that shelter in burrows by day and emerge at night to feed on insects and other small animals. They have been found living in sand dunes amongst Cangrass (*Zygochloa paradoxa*) and Spinifex (Triodia basedowiii). Records come from across the arid zone, including from the Northern Territory, with greatest numbers in the Simpson Desert, in Queensland, and northern South Australia. Confusion in identifying this species has only recently beed resolved. However, there is enough certainty in the records to show that the Crest-tailed Mulgara is one of the many arid land species in decline.

Importance as an indicator: The decline of the Crest-tailed Mulgara and other arid zone mammals is symptomatic of deteriorating environmental conditions. Possible threats to this species include widespread fires, predation by cats and foxes, and overgrazing by cattle, rabbits and other introduced herbivores. However, closer examination of the ecology of this species is required to determine which of these factors is most important.

Look after Crest-tailed Mulgara and other arid land mammals by controlling cats and foxes. Use patch-burning to reduce risk of widespread wildfires. On pastoral properties, maintain a moderate grazing pressure, periodically spell country from grazing to allow recovery of ground cover plants and use strategic placement of waterpoints and fences to ensure some areas are rarely grazed.

Photo: © P. Canty

Northern Territory Status: Endangered
Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=351695

Last updated September 2008

Best practice management for Crest-tailed Mulgara in the Northern Territory

- **Maintain ground layer**
- **Graze moderately & periodically spell country from grazing**
- **Exclude stock from at least part of pastoral properties**
- **Manage fire**
- **Report new populations**
- **More information is needed about this species**

Kowari

Dasyuroides byrnei

What it looks like: The Kowari is a sturdy marsupial with strong back legs, prominent ears and a long, thick, brush-tipped tail.

Where it lives: This marsupial lives on gibber patches among grasslands, sand dunes and river channels, where it feeds on insects and other small animals at night. During the day, it shelters in burrows in the ground. Although recorded from scattered locations through central Australia, lack of recent sighting suggests the Kowari is probably now extinct in the Northern Territory.

Importance as an indicator: Loss of Kowari and many other small to medium-sized mammals from much of their former range indicates a desert environment in trouble. These species face predation by cats and foxes and reduced ground cover and prey abundance as a result of grazing by livestock and wild rabbits.

Look after Kowari other native carnivores by controlling cats and foxes, which compete for prey and may also kill the Kowari. Graze domestic stock at sustainable levels, to allow recovery of native grasses. If possible keep some areas of potential habitat free of livestock. Control feral grazing animals, such as rabbits, which place an extra burden on native pastures.

Photo: © NRETA

Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=247293

Last updated September 2008

Best practice management for Kowari in the Northern Territory

- **Maintain ground layer**
- **Control pest animals**
- **Graze moderately & periodically spell country from grazing**
- **Exclude stock from at least part of pastoral properties**
- **Minimise tourist impact**

Northern Quoll

Dasyurus hallucatus

What it looks like: Northern Quolls are grey brown with white spots on the body. The long black tail is sparsely furred with no spots. The size of a possum, a Northern Quoll has a pointed face, sharp teeth and a clawless big toe.

Where it lives: Northern Quolls live at scattered locations across northern Australia, from south-eastern Queensland to the south-west Kimberley, with a disjunct population in the Pilbara. In the Northern Territory, they are found only in the Top End. They live in near-coastal forests and woodlands, most commonly in rocky country.

Importance as an indicator: Northern Quolls are an indicator of well-managed fire regimes, as they seem unable to persist after extensive late dry season fires, except where they can retreat to rock crevices and caves. They also show that there is a healthy population of small animals for them to eat. However, poisoning by Cane Toads may have eliminated them even from well-managed country. Disease may also be a factor in their rapid decline.

Look after Northern Quoll by managing fire. Create an effective network of early dry season fires to prevent large scale fires later in the year, particularly where quolls have been recorded. Control feral cat numbers, with baiting or shooting. Keep pet cats inside at night. When travelling, check your load to make sure you do not transport toads to islands or beyond their current range.

Photo: *© Martin Armstrong*

Northern Territory Status: Critically Endangered
Australian Status: Endangered

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=176443

Last updated September 2008

Best practice management for Northern Quoll in the Northern Territory

- **Maintain tree cover**
- **Maintain tree hollows**
- **Keep logs and litter**
- **Control pest animals**
- **Manage fire**
- **Investigate/manage disease**

Carpentarian Antechinus

Pseudantechinus mimulus

What it looks like: The Carpentarian Antechinus is a grey, mouse-sized marsupial, with reddish-brown fur behind its large ears. Healthy animals have swollen, carrot-shaped tails that are reddish brown in colour.

Where it lives: The earliest record of this species came from the relatively featureless Mitchell Grass Downs bioregion. All recent records have come from the islands in the south-west of the Gulf of Carpentaria, in the Northern Territory, or the Mount Isa region of Queensland. Currently, animals are found only amongst rocks and boulders, but do not appear to be particular about vegetation types. They eat insects and other small animals.

Importance as an indicator: The early decline of this species, and its subsequent contraction to rocky refuges is mirrored in the decline of a number of northern marsupials, notably the Northern Quoll. Although the cause for this contraction is unclear, rocky areas appear to offer some refuge from intense fires, cane toads and predation by cats.

Look after Carpentarian Antechinus by reducing the frequency and extent of late dry season fires. Introduce a fire regime that ensures a mosaic of habitats burnt at different times, with most areas being burnt no more frequently than every three to five years. To do this, small areas may need to be burnt most years in order to create breaks in the fuel load. Fires should only be lit under mild weather conditions, when the extent of burn can be controlled. Control cats, which are a significant threat to native mammals across the continent. When travelling, check your load to make sure you do not transport toads to islands or beyond their current range.

Photo: © Kym Brennan

Northern Territory Status: Endangered
Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=176925

Last updated September 2008

Best practice management for Carpentarian Antechinus in the Northern Territory

- **Control pest animals**
- **Manage fire**

Northern Brush-tailed Phascogale

Phascogale pirata

What it looks like: The Northern Brush-tailed Phascogale is the size of a small Common Brushtail Possum. It has speckled grey fur, a long, brush-tipped tail, large eyes and a pointed snout.

Where it lives: This species lives in tall open Darwin Woollybutt (*Eucalyptus miniata*) and Darwin Stringybark (*Eucalyptus tetrodonta*) forests. It shelters in tree hollows during the day, and feeds in trees or on the ground by night, taking insects and other small animals. It is known only from offshore islands and a few parts of the mainland of the Top End of the Northern Territory, having declined since the late nineteenth century.

Importance as an indicator: Persistence of the Northern Brush-tailed Phascogale indicates good environmental management – where fires are neither too frequent nor too extensive, and country is neither overgrazed nor over-run by predators. However, even under these conditions, disease and cane toads may be significant problems for this species.

Look after Northern Brush-tailed Phascogale by not clearing forests where it occurs, as it is unlikely to survive the loss of habitat. Control cats, which are significant predators of native mammals. When travelling, check your load to make sure you do not transport toads to islands or beyond their current range. On pastoral properties, ensure a moderate grazing pressure, and periodically spell country from grazing. Light fires only under mild weather conditions, when their extent can be controlled. Burn small areas every year to break up the fuel load and ensure a mosaic of post fire ages. This will also reduce severe late dry season fires, the death of animals in tree hollows, and loss of tree hollows themselves. Control Gamba Grass, which increases fire hazard and intensity.

Photo: *© Kym Brennan*

Northern Territory Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=177965

Last updated September 2008

Best practice management for Northern Brush-tailed Phascogale in the Northern Territory

- **Do not clear habitat**
- **Maintain tree cover**
- **Maintain tree hollows**
- **Keep logs and litter**
- **Control pest animals**
- **Control weeds**
- **Graze moderately & wet season spell**
- **Manage fire**
- **Investigate/manage disease**
- **Report new populations**

Butler's Dunnart

Sminthopsis butleri

What it looks like: Butler's Dunnart is a mouse-sized carnivore with large black eyes and flattened-back ears. Its has grey-brown fur except for its white legs and belly.

Where it lives: Butler's Dunnarts have been recorded in a range of habitats including Eucalypt (*Eucalyptus*) open forest and Paperbark (*Melaleuca*) woodland. They appear to live mostly on the ground, where they shelter under logs and litter, coming out at night to feed on insects and other small animals. This species was first recorded in the North Kimberley bioregion in Western Australia about 40 years ago, but is now known only from Bathurst and Melville Islands.

Importance as an indicator: The presence of this species indicates a particular suite of environmental conditions that are not yet fully understood, but probably include low predation pressures, adequate cover provided by fallen logs and litter, as well as an abundant supply of insects and other prey found in unburnt vegetation.

Look after Butler's Dunnart by not clearing forests or woodlands where it occurs, as it is unlikely to survive the loss of habitat. Control cats, which are significant predators of native mammals. Light fires only under mild weather conditions, when their extent can be controlled. Burn small areas every year to break up the fuel load and ensure a mosaic of post fire ages. This will also reduce severe late dry season fires, the death of animals in fallen logs, and will leave patches of litter and logs intact.

Photo: *© Kym Brennan*

Northern Territory Status: Vulnerable
Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=176909

Last updated September 2008

Best practice management for Butler's Dunnart in the Northern Territory

- **Do not clear habitat**
- **Maintain ground layer**
- **Keep logs and litter**
- **Control pest animals**
- **Control weeds**
- **Manage fire**

Long-tailed Dunnart

Sminthopsis longicaudata

What it looks like: The Long-tailed Dunnart is a mouse-sized carnivore with erect pinkish ears, bulging black eyes and a short, pointed snout. Its fur is grey-brown except for its white belly. Its extremely long tail is hairy at the end.

Where it lives: The Long-tailed Dunnart lives amongst rocks in Acacia woodlands and shrublands of the arid zone. It shelters in rock crevices by day and comes out to feed on insects by day. It has been recorded in a large area between Carnarvon in Western Australia across to West MacDonnell National Park in central Australia, but there have been few recent records in the Northern Territory.

Importance as an indicator: The decline of the Long-tailed Dunnart is a signal that all is not well in arid land environments. While the ultimate cause has not been established, this species faces a range of pressures that together or alone could be responsible for its demise. These include predation by cats and foxes; an altered fire regime that results in widespread, if infrequent, fires; and habitat modification by both Buffel Grass and grazing and trampling by feral and domestic animals.

Look after Long-tailed Dunnart by managing fire, weeds and feral animals. Control cats and foxes, which have had a significant impact on native arid land mammals. Control Buffel grass, which not only alters habitat structure, but also increases fire hazard. Establish a patchwork of recently burnt and long unburnt areas, so that there are always patches of suitable habitat. On pastoral properties, ensure a moderate grazing pressure, and periodically spell country from grazing to allow recovery of ground cover plants.

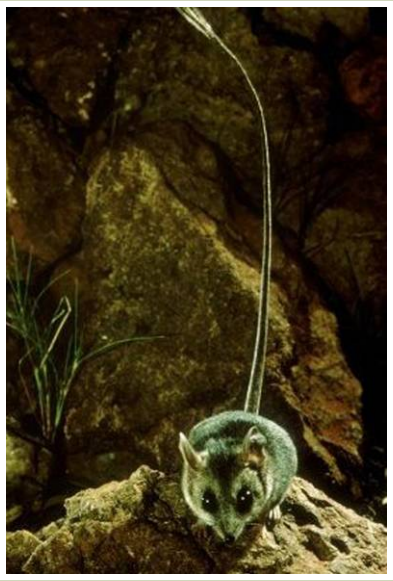


Photo: © Babs and Bert Wells and WA DEC

Northern Territory Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=351775

Last updated September 2008

Best practice management for Long-tailed Dunnart in the Northern Territory

- **Control pest animals**
- **Control weeds**
- **Graze moderately & periodically spell country from grazing**
- **Manage fire**

Sandhill Dunnart

Sminthopsis psammophila

What it looks like: The Sandhill Dunnart is a rat-sized carnivore with large, dark eyes and a short, pointed snout. Mostly grey, its sides are fawn-coloured and its underparts and feet are white. It has darker fur on its forehead and crown.

Where it lives: Sandhill Dunnarts live in spinifex on sand dunes during the day, and come out at night to feed on insects at night. They prefer large spinifex plants that have not been burnt for eight to 20 years and have begun to die off in the centre, but are not yet separating into smaller clumps. They were originally found in South Australia, Western Australia and the south of the Northern Territory, but have not been recorded in the Northern Territory for over a hundred years.

Importance as an indicator: Presence of Sandhill Dunnarts indicates a balanced fire regime that ensures suitable habitat is available. This means there will always be patches that have remained unburnt for between eight and 20 years. Sandhill Dunnarts appear able to survive in areas where there are high cat and fox numbers, but when combined with other pressures, these predators may reduce or eliminate the species.

Look after Sandhill Dunnart and the spinifex country in which it lives by managing fire. Introduce a fire regime that ensures a mosaic of habitats burnt at different times, with most areas being burnt no more frequently than every eight years. To do this, small areas may need to be burnt most years in order to create breaks in the fuel load. Fires should only be lit under mild weather conditions, when extent of burn can be controlled. Control cats and foxes, which are significant predators of native arid zone mammals.

Photo: *© Peter Canty*

Australian Status: Endangered

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Churchill, S. 2001. Recovery Plan for the Sandhill Dunnart (*Sminthopsis psammophila*). Biodiversity Conservation Program Department for Environment and Heritage, South Australia.

Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=351855

Last updated September 2008

Best practice management for Sandhill Dunnart in the Northern Territory

- **Maintain ground layer**
- **Control pest animals**
- **Manage fire**

Golden Bandicoot

Isoodon auratus

What it looks like: The Golden Bandicoot is a rat-like animal with streaky golden brown fur, a short tail, small ears and a long pointed face. The more common northern brown bandicoot is larger, with a shorter snout.

Where it lives: Golden Bandicoots were once widespread through the northern two thirds of the Australian mainland, and are now only found in a few mainland locations along the near-coastal strip of the north-west Kimberley, and on some offshore islands, mostly in Western Australia. Northern Territory's only remaining population is on Marchinbar Island. There, the species lives in heathland and shrubland on sandstone or sandsheets, and avoids dense tree cover and feeds on a broad range of insects and other small animals. They appear to prefer habitat that has been burnt in the last two to five years.

Importance as an indicator: The decline of the Golden Bandicoot is a signal that all is not well in northern arid land environments. While the ultimate cause has not been established, this species faces a range of pressures that together or alone could be responsible. Predation by cats and, in the south, foxes, seem the most significant of these threats. However, disease, grazing pressure and widespread wild fires may have all contributed to the species' demise.

Look after Golden Bandicoot and other small to medium-sized mammals by controlling introduced predators, especially cats and foxes. Establish a patchwork of recently burnt and unburnt areas in close proximity. Small mammals also respond well to removal of grazing pressure from both domestic and feral livestock.

Photo: *© Kym Brennan*

Northern Territory Status: Endangered
Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=176421

Last updated September 2008

Best practice management for Golden Bandicoot in the Northern Territory

- **Maintain shrub layer**
- **Maintain ground layer**
- **Control pest animals**
- **Graze moderately & periodically spell country from grazing**
- **Exclude stock from at least part of pastoral properties**
- **Manage fire**
- **Investigate/manage disease**

Greater Bilby

Macrotis lagotis

What it looks like: The Greater Bilby is a large bandicoot with soft silky grey and shimmery pink fur over most of its body. It has a clean white belly, and a white-tipped, chocolate-coloured tail. It has a long and delicate snout ending in a pink nose, and large, rabbit-like ears.

Where it lives: Bilbies were once found through the woodlands, spinifex grasslands and shrublands of mainland Australia, wherever sandy soils were suitable for building extensive burrows. Management by Traditional Owners maintained a patchy fire regime, protecting habitat needed for shelter and promoting food diversity. Favoured foods include termites, witchetty grubs, spiders, truffles and the bulbs of sedges. In the Northern Territory, Greater Bilbies are still found patchily through the Tanami, Sturt Plateau and Great Sandy Desert bioregions.

Importance as an indicator: The Greater Bilby's decline across mainland Australia signifies that all is not well in arid land environments. This species faces a range of pressures that together or alone could be responsible for its demise. Predation by cats and foxes, a shift in fire regime that reduced availability of suitable spinifex patches, and competition from introduced grazing animals, especially rabbits, seem the most significant of these threats.

Look after Greater Bilby by controlling fox, cat and wild dog numbers using effective methods. Reinstate a patchy fire regime that provides both areas of recently burnt and long unburnt country in close proximity. Use strategic placement of fences and waterpoints to manage grazing pressure on pastoral properties, ensuring that parts of the property remain ungrazed. Periodically spell country to allow recovery of the grass layer. Control grazing by feral animals, particularly rabbits.

Photo: *© NRETA*

Northern Territory Status: Vulnerable
Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Pavey, C. 2006. National Recovery Plan for the Greater Bilby *Macrotis lagotis*. Northern Territory Department of Natural Resources, Environment and the Arts, Alice Springs.

Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=177125

Last updated September 2008

Best practice management for Greater Bilby in the Northern Territory

- **Maintain ground layer**
- **Control pest animals**
- **Graze moderately & periodically spell country from grazing**
- **Exclude stock from at least part of pastoral properties**
- **Manage fire**

Common Brushtail Possum (southern) *Trichosurus vulpecula vulpecula*

What it looks like: The Common Brushtail possum is a medium-sized mammal with fur that is grey or brown, and usually paler on the breast and belly. It has large, prominent ears that have a narrowly round tip and are longer than they are broad. Its bushy tail is slightly shorter than its combined head and body length.

Where it lives: This subspecies is the rarer of the two subspecies of Common Brushtail Possum occurring in the Northern Territory, and is found only in isolated populations in the south. It shelters in caves, rock holes, tree hollows, and the tops of dense trees, and sometimes even in house roofs, and feeds on flowers, fruits and leaves of a wide range of non-eucalypt species.

Importance as an indicator: The decline of Common Brushtail Possum in central Australia indicates a deterioration of environmental conditions for this species. It has been attributed severe drought being exacerbated by a suite of potential threatening processes such as grazing by cattle and rabbits, hunting, altered fire regimes, and predation.

Look after Common Brushtail Possum (southern) by implementing sustainable grazing practices on pastoral leases. Manage for high habitat diversity by establishing a patchwork of recently burnt and long unburnt areas, leaving patches of fruiting and flowering shrubs. Limit fire intensity to protect tree hollows and prevent canopy scorch, which diminishes flower and fruit production. Control rabbits and other grazing animals that compete for food, and cats and foxes, which have had a significant impact on native arid land mammals. Make sure any possum harvesting is undertaken according to a sustainable management plan.

Photo: © NRETA

Northern Territory Status: Endangered

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=177146

Last updated September 2008

Best practice management for Common Brushtail Possum (southern) in the Northern Territory

- **Maintain tree cover**
- **Maintain tree hollows**
- **Maintain shrub layer**
- **Control pest animals**
- **Graze moderately & periodically spell country from grazing**
- **Manage fire**
- **Limit harvest to sustainable levels**

Mala

Lagorchestes hirsutus

What it looks like: The mala is a small upright wallaby with extremely short front paws. Its long, shaggy fur is reddish-brown above, and paler beneath.

Where it lives: Mala were once found throughout the woodlands and spinifex grasslands across the central and western deserts, where fire management by Indigenous land managers maintained patchiness in spinifex, and ensured suitable hummock size and food diversity. The species is now extinct on mainland Australia. The one wild colony on an island in Western Australia, exists as the result of conservation efforts by Western Australian ecologists.

Importance as an indicator: The Mala's disappearance from mainland Australia signifies that all is not well in arid land environments. While the ultimate cause has not been established, this species faces a range of pressures that together or alone could be responsible for its demise. A shift in fire regime that reduced availability of suitable spinifex patches and predation by cats and foxes seem the most significant of these threats.

Look after Mala and other small to medium-sized mammals by managing fire and feral animals. Establish a patchwork of recently burnt and long unburnt areas. Control cats and foxes, which have had a significant impact on native arid land mammals. Predator-exclusion compounds may be necessary to enable the persistence of Mala on the mainland.

Photo: © NRETA

Northern Territory Status: Extinct
Australian Status: Endangered

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Langford, D. 1999. The Mala (*Lagorchestes hirsutus*) Recovery Plan. Parks & Wildlife Commission, Northern Territory & Arid Zone Research Institute, Alice Springs.

Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=351795

Last updated September 2008

Best practice management for Mala in the Northern Territory

- **Maintain ground layer**
- **Control pest animals**
- **Fence key habitat**
- **Manage fire**

Black-footed Rock Wallaby *Petrogale lateralis*

What it looks like: The MacDonnell Ranges race of Black-footed Rock Wallaby is a medium-sized macropod, with a long tail ending in a dark brown brush. Its dark eyes are emphasised by a pale stripe along each cheek. It is otherwise shades of grey, fawn and brown, with dark armpits and tips to its ears, and fawn-coloured front paws.

Where it lives: Black-footed Rock Wallabies live in rocky outcrops and nearby steep rocky slopes, though were previously more widespread. They feed mainly on grass, but also take herbs, leaves and fruits. They can survive without drinking when necessary. The MacDonnell Ranges race is found in the southern half of the Northern Territory, concentrated in the MacDonnell Ranges, as well as in the Gibson Desert of Western Australia, and northern South Australia.

Importance as an indicator: The persistence of Black-footed Rock Wallaby through most of its range in the Northern Territory indicates that good environmental conditions exist for this subspecies. Elsewhere, predation by foxes and cats, and habitat degradation by grazing by introduced herbivores are implicated in the decline of this rock wallaby. Restriction to rocky areas is thought to be a result of extensive fires rendering much of their habitat unsuitable.

Look after Black-footed Rock Wallaby by controlling cats and foxes, which have caused declines in many arid zone mammals. Control rabbits, which probably reduce food availability. Also manage cattle numbers to prevent overgrazing, spelling parts of the property from grazing when practicable. Establish a fine-scale fire mosaic to minimise the risk of extensive wildfires.

Photo: *© Steve Murphy & AWC*

Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=351635

Last updated September 2008

Best practice management for Black-footed Rock Wallaby in the Northern Territory

- **Maintain ground layer**
- **Control pest animals**
- **Graze moderately & periodically spell country from grazing**
- **Manage fire**

Southern Marsupial Mole

Notoryctes typhlops

What it looks like: This small, furry creature has an almost featureless face, a fat body, a short, stumpy tail, and long fingernails designed for digging. Its body colour can be anything from almost white to golden red.

Where it lives: Southern Marsupial Moles live in sandy deserts, where they spend most of their time underground feeding on insects and other small animals. They appear to be most common in well-vegetated dunes, but are also found in sandy plains and river flats. Their distribution covers central Western Australia, northern South Australia and south-western Northern Territory, as far north as just east of Kalkarindji.

Importance as an indicator: A decline in the species' abundance has been reported by Aboriginal people living within its range. Threats faced by the species are thought to include predation by feral cats and foxes and dingoes, and soil compaction caused by stock movements or by vehicles. Altered fire regimes, resulting in a decline in food abundance, is also considered important.

Look after Southern Marsupial Mole by managing feral animals. Control large animals, such as camels, to reduce soil compaction and loss of vegetation cover, and cats and foxes, which have had a significant impact on native arid land mammals. On pastoral properties, ensure a moderate grazing pressure, and spell country from grazing to allow the recovery of ground cover plants whenever practicable. Maintain plant diversity by implementing a fire regime that ensures a mosaic of habitats burnt at different times, with no areas being burnt more frequently than every three to five years. Small areas may need to be burnt most years in order to create breaks in the fuel load. Fires should only be lit under mild weather conditions, when extent of burn can be controlled.

Photo: © *NRETA*

Northern Territory Status: Vulnerable
Australian Status: Endangered

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=352105

Last updated September 2008

Best practice management for Southern Marsupial Mole in the Northern Territory

- **Maintain shrub layer**
- **Maintain ground layer**
- **Control pest animals**
- **Graze moderately & periodically spell country from grazing**
- **Manage fire**

Arnhem Leaf-nosed Bat

Hipposideros inornata

What it looks like: The Arnhem Leaf-nosed Bat is a medium-sized very pale brown bat. It has large, pointed ears and a well-developed nose-leaf.

Where it lives: This bat roosts in caves or abandoned mines in cool drafty areas, close to water, but may also use tree hollows. It forages in riparian areas and in eucalypt tall open forests, where it feeds on flying insects and other small animals. Restricted to the Northern Territory, it is only known to occur on the western Arnhem Land sandstone massif, although it was formerly found in Litchfield National Park.

Importance as an indicator: The presence of insectivorous bats indicates suitable roosting sites nearby and intact and healthy feeding habitat. The disappearance of Arnhem Leaf-nosed Bat from Litchfield National Park highlights the extreme sensitivity of this species to disturbance. The most likely cause is humans visiting roosting caves, a threat which is now under control. Rarity of the species may indicate a shortage of suitable, undisturbed roost sites, but may also reflect health of the broader landscape.

Look after Arnhem Leaf-nosed Bat by managing for a high habitat diversity that will ensure an abundance of prey. Establish a fire regime that ensures patches of both recently burnt and long-unburnt country. Keep weeds and feral animals under control. Do not disturb known roost sites.

Photo: *© Sue Churchill*

Northern Territory Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=177085

Last updated September 2008

Best practice management for Arnhem Leaf-nosed Bat in the Northern Territory

- **Maintain tree cover**
- **Maintain tree hollows**
- **Control pest animals**
- **Control weeds**
- **Manage fire**
- **Minimise tourist impact**

Bare-rumped Sheath-tailed Bat

Saccolaimus saccolaimus

What it looks like: This large bat has dark reddish-brown to black fur with white speckling. Its rump is furless, and the tip of its tail extends beyond its tail membrane.

Where it lives: Bare-rumped Sheath-tailed Bats live in the coastal lowlands, where they have been recorded in open Screw-Palm woodland, Eucalypt tall open forest and rainforest. They forage for flying insects high in the canopy, and roost in tree hollows. Found across northern Australia, they have only been reported from four low-lying locations in the Northern Territory, between Berry Springs and Kakadu National Park.

Importance as an indicator: Insectivorous bats are a barometer of healthy insect populations, which in turn, reflect the health of the broader environment. The Bare-rumped Sheath-tailed Bat is also dependent on hollow availability, which can be reduced by vegetation clearance or frequent and intense fires. Vegetation change associated with saltwater intrusion and/or invasion by exotic species may affect habitat suitability.

Look after Bare-rumped Sheath-tailed Bat by managing for a high habitat diversity that will ensure an abundance of prey. Establish a fire regime that maintains patches of both recently burnt and long-unburnt country. Minimise fire intensity to avoid damaging tree hollows. Keep weeds and feral animals under control. Minimise your contribution to climate change to help avert sea level rise lading to habitat loss.

Photo: *© Bruce Taubert*

Australian Status: Critically Endangered

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=177111

Last updated September 2008

Best practice management for Bare-rumped Sheath-tailed Bat in the Northern Territory

- **Do not clear habitat**
- **Protect rainforest habitat**
- **Maintain tree cover**
- **Maintain tree hollows**
- **Control pest animals**
- **Control weeds**
- **Manage fire**
- **Minimise your contribution to climate change**

Brush-tailed Rabbit-rat

Conilurus penicillatus

What it looks like: The Brush-tailed Rabbit-rat is a chubby brown rat with a white belly. It has long ears and a long black or white-tipped furry tail.

Where it lives: Brush-tailed Rabbit-rats live in tall eucalypt forest. Mostly arboreal, they shelter in hollows or the crowns of palms. They eat a range of foods, but prefer grass seeds. Once widespread across the Top End, they are now restricted to Cobourg Peninsula, Kakadu National Park and a few islands.

Importance as an indicator: Rabbit-rats only persist where their habitat remains uncleared and intact. Having a small home range, they probably don't move far if their habitat is burnt, when they are at risk of starvation, as food is less abundant in burnt areas. Overgrazing of their preferred grasses by cattle may prevent seeding, again leading to food shortages. Cats are likely predators, especially after fires, when Rabbit-rats must forage away from cover. Presence of Brush-tailed Rabbit-rats therefore indicates an intact environment in which fire is well managed, grazing is moderate, and predators are controlled. The rapid decline of this species may be indicative of disease.

Look after Brush-tailed Rabbit-rat by managing for a fine-grained patchwork of burnt and unburnt areas. This can best be achieved by lighting some small fires early in the dry season or after the first wet season rains, and forming links with natural fire breaks, such as rivers or roads. This will also help to prevent severe late dry season fires, the death of animals in tree hollows, and loss of tree hollows themselves. However, even early dry season fires can be severe where fuel loads are dominated by Gamba Grass, so control of this exotic weed is essential in and around Rabbit-rat habitat. Control cats using baits and/or traps.

Photo: © Kym Brennan

Northern Territory Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=176414

Last updated September 2008

Best practice management for Brush-tailed Rabbit-rat in the Northern Territory

- **Do not clear habitat**
- **Maintain tree cover**
- **Maintain tree hollows**
- **Maintain ground layer**
- **Keep logs and litter**
- **Control pest animals**
- **Control weeds**
- **Graze moderately & wet season spell**
- **Manage fire**
- **Investigate/manage disease**

Golden-backed Tree-rat

Mesembriomys macrurus

What it looks like: Golden-backed Tree-rat is a large rodent with white feet and a long, slightly brush-tipped tail that is white for more than half its length. Its grey fur is highlighted along the back in a broad chestnut-gold sweep.

Where it lives: Golden-backed Tree-rats spend most of their lives in trees, roosting in hollows or the tops of Screw Palms (*Pandanus*) by day, and emerge to feed on seeds, fruits, leaves and insects by night. In the Northern Territory, there are only three widely-spaced collections from across the Top End. These records were all from riverine vegetation, and there have been no official reports since 1969. Aboriginal knowledge of the species also indicates that it occupied most of the Arnhem Land plateau. Golden-backed Tree-rats are also found in the Kimberley region of western Australia, where they are more common.

Importance as an indicator: The apparent disappearance of the Golden-backed Tree-rat is a sign of poor habitat conditions. Predation by cats may be the most significant threat. However, loss of hollows, extensive wildfires (in part fuelled by introduced grasses), grazing of food plants by livestock and feral animals, and disease may have all contributed to the species' demise.

Look after Golden-backed Tree-rat by controlling cats using effective methods, such as shooting or baiting. Reinstate a patchy fire regime that provides areas of recently burnt and long unburnt vegetation in close proximity. Minimise fire intensity to avoid damaging tree hollows. Control weeds, particularly those that increase fire intensity. Excluding grazing animals, both domestic and feral, from even small parts of pastoral properties will create habitat for a range of native species, and allow recolonisation by Golden-backed Tree-rats if these are still present in the area.

Photo: *© Ian Morris*

Northern Territory Status: Critically Endangered
Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=176951

Last updated September 2008

Best practice management for Golden-backed Tree-rat in the Northern Territory

- **Maintain tree cover**
- **Maintain tree hollows**
- **Control pest animals**
- **Control weeds**
- **Exclude stock from at least part of pastoral properties**
- **Manage fire**
- **Investigate/manage disease**
- **Report new populations**
- **More information is needed about this species**

Northern Hopping-mouse

Notomys aquilo

What it looks like: The Northern Hopping-mouse is a small rodent. It has sandy brown fur, except on its belly, which is white. Similar to other hopping-mice, it has large eyes, long narrow hind-feet, a longer tail tipped with a tuft of longer dark hairs, and large ears, which are almost furless.

Where it lives: The Northern Hopping-mouse lives in sandy areas, in heathlands and eucalypt woodlands, and ventures into grasslands. It occupies complex burrow systems by day, and feeds at night, probably on seeds taken from the ground. It is known from only Groote Eylandt, Arnhem Land and the gulf country, with a possible record from Cape York Peninsula.

Importance as an indicator: With its restricted distribution and narrow habitat requirements, the Northern Hopping-mouse will depend on good environmental management for its persistence. Predation by cats and a shift in fire regime reducing floristic diversity seem to be its most significant threats.

Look after Northern Hopping-mouse by controlling cat numbers with effective methods, such as shooting or baiting. Implement a fire regime that ensures a mosaic of habitats burnt at different times, with most areas being burnt no more frequently than every three to five years. To do this, small areas may need to be burnt most years in order to create breaks in the fuel load. Fires should only be lit under mild weather conditions, when extent of burn can be controlled.

Photo: *© Ian Morris*

Northern Territory Status: Vulnerable
Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=176436

Last updated September 2008

Best practice management for Northern Hopping-mouse in the Northern Territory

- **Maintain shrub layer**
- **Maintain ground layer**
- **Keep logs and litter**
- **Control pest animals**
- **Manage fire**

Fawn Hopping-mouse

Notomys cervinus

What it looks like: The fur of this chubby little rodent is mostly pinkish-fawn with grey streaks. It has a marshmallow white belly, large furless ears, and a long tail that ends in a tuft of dark hairs. Its long hot-pink back legs contrast with small, paler front paws. It lives in small family groups of two to four individuals.

Where it lives: The Fawn Hopping-mouse is a gibber-dwelling species. It shelters in deep burrows by day and emerges to feed at night, primarily on seeds. It does not need to drink. Despite this hardiness, there have been few Northern Territory records of this species in the last century.

Importance as an indicator: The decline of the Fawn Hopping-mouse is a signal that all is not well in arid land environments. While the ultimate cause has not been established, predation by cats and foxes combined with unsustainable grazing by both feral and domestic animals could be responsible for its demise.

Look after Fawn Hopping-mouse by managing feral animals. Control rabbits and other grazing animals that compete for its food, and cats and foxes, which have had a significant impact on native arid land mammals. Maximise habitat diversity and food availability by establishing a patchy fire regime, burning small areas whenever fuel conditions will support fire, but not allow it to get away from target areas.

Photo: © Peter Canty

Northern Territory Status: Endangered
Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=351735

Last updated September 2008

Best practice management for Fawn Hopping-mouse in the Northern Territory

- **Maintain ground layer**
- **Control pest animals**
- **Graze moderately & periodically spell country from grazing**
- **Manage fire**

Dusky Hopping-mouse

Notomys fuscus

What it looks like: The Dusky Hopping-mouse has a marshmallow white belly, but is otherwise pale brown with grey streaks. It has large furless ears, and a long tail that ends in a tuft of dark hairs. It has strong front teeth, large dark eyes, and extremely long and narrow hind feet that contrast with small front paws.

Where it lives: Dusky Hopping-mice live in sandy dune country where there is perennial plant cover and water nearby. Most of the species' range is in northern South Australia and western Queensland. There are a few records from in the Northern Territory from early last century.

Importance as an indicator: The decline of the Dusky Hopping-mouse is a signal that all is not well in arid land environments. While the ultimate cause has not been established, predation by cats and foxes, and overgrazing by feral and domestic animals, particularly mice, have been postulated as contributing factors.

Look after Dusky Hopping-mouse by managing feral animals. Control mice and rabbits, which compete for its food, and cats and foxes, which have had a significant impact on native arid land mammals. On pastoral properties, ensure a moderate grazing pressure, and spell country from grazing to allow the recovery of ground cover plants whenever practicable. Maximise habitat diversity and food availability by establishing a patchy fire regime, burning small areas whenever fuel conditions will support fire, but not allow it to get away from target areas.

Photo: *© Peter Canty*

Northern Territory Status: Endangered
Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=351725

Last updated September 2008

Best practice management for Dusky Hopping-mouse in the Northern Territory

- **Maintain shrub layer**
- **Maintain ground layer**
- **Control pest animals**
- **Graze moderately & periodically spell country from grazing**
- **Exclude stock from at least part of pastoral properties**
- **Manage fire**

Plains Mouse

Pseudomys australis

What it looks like: The Plains Mouse is a stocky rat-sized rodent, with a rounded snout and long ears. Its fur is greyish-brown, often lustrous in appearance, except for its paler flanks and white legs and belly. Its tail is not quite as long as the rest of its body.

Where it lives: Plains Mice, unsurprisingly, live on plains. They are most abundant on cracking clay soils that form near minor drainage lines of the gibber plains, their populations increasing following rain. They live in communal burrows, emerging at night to feed on seeds, green plants and insects. Plains Mice once occupied suitable habitat in most mainland States, but are now restricted to the Lake Eyre Basin in South Australia, barely extending over the border into the Northern Territory and Queensland.

Importance as an indicator: Presence of Plains Mouse indicates that suitable habitat has not been overly grazed or trampled, and that predation pressure is relatively low.

Look after Plains Mouse by controlling cats and foxes, which have had a significant impact on native arid land mammals. On pastoral properties, ensure a moderate grazing pressure, and spell country from grazing, especially after rain when the ground is soft. Control other introduced herbivores, especially rabbits, which may compete with Plains Mice for food and destroy their burrows.

Photo: © Babs and Bert Wells & DEC WA

Northern Territory Status: Endangered
Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=247448

Last updated September 2008

Best practice management for Plains Mouse in the Northern Territory

- **Maintain ground layer**
- **Control pest animals**
- **Graze moderately & periodically spell country from grazing**
- **Fence key habitat**
- **Protect wetland habitat**

Shark Bay Mouse

Pseudomys fieldi

What it looks like: The Shark Bay Mouse, also known as the Alice Springs Mouse, is chubby, neckless rodent with grey, shaggy hair and prominent round ears. Its tail is slightly longer than the rest of its body.

Where it lives: There have been no live records of the Alice Springs Mouse in the Northern Territory since 1895. However, the Shark Bay Mouse was later found to be the same species. This mouse appears to have once occurred through much of the central and western arid zone. Persisting only on Bernier Island in Western Australia, it has recently been introduced to Faure Island. On islands, it lives in coastal sand dunes at the base of cliffs. It uses runways and short shallow burrows, and feeds on flowers, foliage, fungi and invertebrates.

Importance as an indicator: The decline of the Shark Bay Mouse is a signal that all is not well in arid land environments. While the ultimate cause has not been established, this species faces a range of pressures that together or alone could be responsible for its demise. These include predation by cats and foxes; an altered fire regime that results in widespread, if infrequent, fires and grazing by feral and domestic animals.

Look after Shark Bay Mouse and other arid land mammals by managing fire and feral animals. Control cats and foxes, which have had a significant impact on native mammals. Establish a patchwork of recently burnt and long unburnt areas, so there are always patches of suitable habitat. On pastoral properties, ensure a moderate grazing pressure, and periodically spell country from grazing to allow recovery of ground cover plants. Excluding cattle from parts of the property will provide habitat for a range of native species, and may allow the recolonisation of the Shark Bay Mouse in areas where this species persists.

Photo: © Babs and Bert Wells & DEC WA

Northern Territory Status: Extinct in the Northern Territory
Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=351625

Last updated September 2008

Best practice management for Shark Bay Mouse in the Northern Territory

- **Maintain ground layer**
- **Control pest animals**
- **Graze moderately & periodically spell country from grazing**
- **Exclude stock from at least part of pastoral properties**
- **Manage fire**

Arnhem Rock-rat

Zyzomys maini

What it looks like: The Arnhem Rock-rat is a medium-sized rodent, with large whiskers and a distinctive 'Roman nose'. Its tail is swollen at the base and has conspicuously long hairs near the tip.

Where it lives: The Arnhem Rock-rat is a ground-dwelling animal found only in the sandstone country of western Arnhem Land. It shelters among boulders or in rock crevices by day and comes out to feed on seeds, fruit and leaves at night.

Importance as an indicator: Presence of healthy populations of Arnhem Rock rat indicates that fires in sandstone country in which it lives are well-managed – neither too frequent nor too extensive – and not over-run by predators.

Look after Arnhem Rock-rat by reducing the frequency and extent of late dry season fires. Introduce a fire regime that ensures a mosaic of habitats burnt at different times, with most areas being burnt no more frequently than every three to five years. To do this, small areas may need to be burnt most years in order to create breaks in the fuel load. Fires should only be lit under mild weather conditions, when the extent of burn can be controlled. Control cats, which are a significant threat to native mammals across the continent.

Photo: *© Martin Armstrong*

Northern Territory Status: Vulnerable
Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=176407

Last updated September 2008

Best practice management for Arnhem Rock-rat in the Northern Territory

- **Maintain shrub layer**
- **Maintain ground layer**
- **Keep logs and litter**
- **Control pest animals**
- **Manage fire**

Carpentarian Rock-rat

Zyzomys palatalis

What it looks like: The Carpentarian Rock-rat is a large brown rodent with a white belly and white feet. Its long tail, which is particularly fat close to its body, may break off to form a stump.

Where it lives: Carpentarian Rock-rats are restricted to scree slopes of sandstone gorges and escarpments, where they live in rainforest and mixed broadleaf woodland close to permanent water. They are known only from Wollogorang Station in the Gulf of Carpentaria hinterland.

Importance as an indicator: Persistence of Carpentarian Rock-rats depends on the health of the monsoon forests in which it grows.

Look after Carpentarian Rock-rat and other species that are restricted to small monsoon forest patches by managing fire in the surrounding woodlands. Back-burning around rainforest patches early in the year to reduce fuel hazards will protect these sensitive habitats from periodic fire incursions. However, repeated burning may promote the growth of Annual Sorghum, which increases fire hazard. So try not to burn exactly the same place every year. If necessary, burn after the first wet season storms to control Sorghum and reduce fire hazard. Control cats using effective methods such as shooting or baits. Make sure at least parts of the property are free of grazing animals.

Photo: *© Sean Webster*

Northern Territory Status: Critically Endangered
Australian Status: Endangered

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=177139

Last updated September 2008

Best practice management for Carpentarian Rock-rat in the Northern Territory

- **Protect rainforest habitat**
- **Maintain tree cover**
- **Control pest animals**
- **Exclude stock from at least part of pastoral properties**
- **Manage fire**

Central Rock-rat

Zyzomys pedunculatus

What it looks like: Central Rock-rat is a medium-sized, stocky rodent, with thick and soft yellowish-brown fur above and cream or white fur below. It has a long, thick and furry tail and a distinctive 'Roman nose'.

Where it lives: The Central Rock-rat is primarily a seed-eater of tussock and spinifex grasslands and low open woodland in arid rocky ranges. It was once found across central Western Australia and the Northern Territory, and was thought to have gone extinct until its rediscovery in the MacDonnell Ranges in 1996. There have been no records of the species since 2002.

Importance as an indicator: The decline of the Central Rock-rat is a signal that all is not well in arid land environments. While the ultimate cause has not been established, this species faces a range of pressures that together or alone could be responsible for its demise. These include unsustainable grazing by a combination of feral and domestic animals, predation by cats and foxes, and an altered fire regime that results in widespread, if infrequent, fires.

Look after Central Rock-rat by managing fire and feral animals. Establish a patchwork of recently burnt and long unburnt areas. Control rabbits and other grazing animals that compete for its food, and cats and foxes, which have had a significant impact on native arid land mammals.

Photo: *© NRETA*

Northern Territory Status: Endangered
Australian Status: Endangered

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=351675

Last updated September 2008

Best practice management for Central Rock-rat in the Northern Territory

- **Maintain ground layer**
- **Control pest animals**
- **Graze moderately & periodically spell country from grazing**
- **Manage fire**

Water Mouse

Xeromys myoides

What it looks like: The Water Mouse (also known as the False Water Rat) is a small rodent with a broad, relatively short face and very small eyes and ears. Its short, sleek fur is pale grey above and white below. Its tail is shorter than its body.

Where it lives: Water Mice live in coastal wetlands, such as mangrove forests, freshwater swamps, and floodplain saline grasslands. Their presence is indicated by distinctive, the tall earthen mounds tat they build. They also make large grassy nests, and use burrows. They use these for structure for shelter by day, and emerge to feed on crabs, snails and other marine and freshwater invertebrates at night. They are known from only a few places in the the Northern Territory - along the Darwin and Arnhem coastal plains and on the Tiwi Islands, but also occur along the Queensland coast.

Importance as an indicator: Presence of Water Mice is one indicator of the health of coastal wetlands. These environments are rapidly transformed by coastal developments and degraded by weed invasion, cattle grazing and pig digging. Water Mice may also be sensitive to predation by feral cats.

Look after Water Mouse by protecting coastal environments from clearance and disturbance, and minimising your contribution to climate change. Restrict access of cattle, and control pigs and feral cats. Manage wetland weeds, particularly Prickly Mimosa and Para Grass.

Photo: *© Kym Brennan*

Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=176450

Last updated September 2008

Best practice management for Water Mouse in the Northern Territory

- **Maintain ground layer**
- **Control pest animals**
- **Control weeds**
- **Graze moderately & wet season spell**
- **Exclude stock from at least part of pastoral properties**
- **Protect wetland habitat**
- **Minimise your contribution to climate change**
- **Report new populations**

Canefield Rat

Rattus sordidus

What it looks like: The Canefield Rat is a medium-sized, communal rodent with particularly short legs. Except for its pale grey belly and ears, it has dark golden-brown, coarse, almost spiny fur and long guard hairs on its rump.

Where it lives: Canefield Rats typically live in tropical sub-coastal grasslands, where they feed on grass seeds, grass stems and insects. Northern Territory records are all from grassy woodlands among coastal dunes. Elsewhere habitat is characteristically grassland on moist, friable soils, suitable for extensive burrow systems, often around swamps. In the Northern Territory, the Canefield Rat is known only from South-West Island, where there are thought to be fewer than 2000 individuals, and recent surveys suggest a population decline. It also occurs in eastern Australia, as far south as north-eastern New South Wales, and west as Normanton. In cultivated areas, it can occur in pest proportions.

Importance as an indicator: As the Canfield Rat exists through much of north-eastern Australia, and can reach pest levels in sugarcane plantations, where it coexists with both cats and cane toads, its initial rarity in the Northern Territory seems to reflect availability of habitat, rather than management-related threats. However, the possible decline of the single Northern Territory population presents a conundrum. Island populations are typically more susceptible to stresses than are mainland populations of the same species. In the case of the Canefield Rat, these stresses may include more extensive, unmanaged fires, predation by cats, and competition for prey from cane toads.

Look after Canefield Rat in the Northern Territory by controlling feral cats (and other exotic species) on the Pellew Islands, and reinstating a more traditional fire regime by Indigenous land managers to maintain its grassland habitat.

Photo: *© Michelle Smith*

Northern Territory Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=176917

Last updated September 2008

Best practice management for Canefield Rat in the Northern Territory

- **Maintain ground layer**
- **Control pest animals**
- **Manage fire**

Sei Whale

Balaenoptera borealis

What it looks like: The Sei Whale is a large baleen whale that can grow to about 16 metres long. It is dark blue-grey on the back and paler below, with a small prominent fin about two-thirds of way down its body. It has a single ridge from the tip of its snout to its blowhole, and numerous throat grooves.

Where it lives: Sei Whales are found in oceans across the world, from tropical waters to near polar regions. They are most frequently seen in deep water, where they feed on fish, krill and copepods taken from the ocean surface. They generally occur in small groups, but may form feeding aggregations. Females breed every two years and produce one calf in each breeding cycle. There has been only one Sie Whale sighting in Northern Territory waters.

Importance as an indicator: Hunting pressure reduced Sei Whales to about one quarter of their original Southern Hemisphere population of 100,000 animals. The fact that any Sei Whales venture into Northern Territory waters suggests the species is recovering. Threats remain from ship collisions, entanglement in nets, noise from offshore construction and excessive tourist attention. Depletion of food resources from over-fishing or climate change are significant concern. Pressure to resume commercial whaling is mounting.

Look after Sei Whale by minimising your contribution to climate change. If whale-watching, do not interfere with or distress the animals. Avoid activities that contribute to marine pollution, including noise pollution. Commercial fisheries should use nets that do not ensnare whales. Fisheries should be managed to prevent overfishing of species fed on by whales. Management of Sei Whales and other whales species will be improved through greater knowledge of their distribution, status and habitat requirements in and around Northern Territory waters.

Photo: © NOAA

Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=280678

Last updated September 2008

Best practice management for Sei Whale in the Northern Territory

- **Manage fisheries sustainably**
- **Reduce bycatch**
- **Prevent marine pollution**
- **Minimise tourist impact**
- **Minimise your contribution to climate change**

Blue Whale

Balaenoptera musculus

What it looks like: This largest of marine mammals can grow to 30 m long. It is a mottled blue-grey, and has a very small fin towards the end of its back. It filters food from the water through numerous long grooves on its throat. Difficult to see, Blue Whales spend most of their time below the surface of the water.

Where it lives: Blue Whales live in all major oceans, annually migrating from tropical breeding grounds to summer feeding grounds. Blue Whales breed every 2-3 years, having one calf at a time. They feed in areas of coldwater upwellings, and spend summer in the Southern Ocean, feeding on krill and squid. Most sighting are of solitary animals or of a female with her calf. The only Northern Territory records are of Blue Whales washed up on beaches.

Importance as an indicator: Blue Whale records in Northern Territory waters are a testament to the resilience of a species once hunted to near-extinction, but now recovering. Threats remain from ship collisions, entanglement in nets, noise from offshore construction and excessive tourist attention. Depletion of krill stocks from over-fishing or climate change are significant concern. Pressure to resume commercial whaling is mounting.

Look after Blue Whale by minimising your contribution to climate change. If whale-watching, do not interfere with or distress the animals. Avoid activities that contribute to marine pollution, including noise pollution. Commercial fisheries should use nets that do not ensnare whales. Southern fisheries should be managed to prevent overfishing of krill.

Photo: © Patty Geary & ACS

Australian Status: Endangered

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=233883

Last updated September 2008

Best practice management for Blue Whale in the Northern Territory

- **Manage fisheries sustainably**
- **Reduce bycatch**
- **Prevent marine pollution**
- **Minimise tourist impact**
- **Minimise your contribution to climate change**

Humpback Whale

Megaptera novaeangliae

What it looks like: This large marine mammal can grow to 18 m long. Mostly black, it is white on its chin, belly and flippers. Clusters of tubercles make it look barnacle-encrusted. Its spectacular displays include launching its body out of the ocean, then crashing down on the water surface, and raising its broad tail flukes above the water in repeated dives.

Where it lives: Humpback Whales live in all major oceans, annually migrating from tropical breeding grounds to summer feeding grounds. One population migrates along Australia's west coast (8-14,000 individuals). Another uses the east coast (3-4,000 individuals). Both spend summer in the Southern Ocean, feeding on krill and small schooling fish. There have been several recent sighting in Northern Territory waters, though the closest known breeding area is along the Kimberley coast. Humpback Whales breed every 2-3 years, having one calf at a time. They use inshore areas, but fast during their time in the tropics. Most sightings are of solitary animals or of a female with her calf.

Importance as an indicator: Humpback Whale sightings in Northern Territory waters are a testament to the resilience of a species once hunted to near-extinction, but now recovering. Threats remain from ship collisions, entanglement in nets, noise from offshore construction and excessive tourist attention. Depletion of krill stocks from over-fishing or climate change is a significant concern. Pressure to resume commercial whaling is mounting.

Look after Humpback Whale by minimising your contribution to climate change. If whale-watching, do not interfere with or distress the animals. Avoid activities that contribute to marine pollution, including noise pollution. Commercial fisheries should use nets that do not ensnare whales. Southern fisheries should be managed to prevent overfishing of krill.

Photo: © Patty Geary & ACS

Australian Status: Vulnerable

Text compiled by Gabriel Crowley & Mark Ziembicki

based on Woinarski J.C.Z., Pavey C., Kerrigan R., Cowie I. & Ward S. 2007. *Lost from our Landscape - Threatened Species of the Northern Territory*. Northern Territory Department of Natural Resources, Environment and the Arts, Darwin.

www.landmanager.org.au/view/index.aspx?id=280686

Last updated September 2008

Best practice management for Humpback Whale in the Northern Territory

- **Manage fisheries sustainably**
- **Reduce bycatch**
- **Prevent marine pollution**
- **Minimise tourist impact**
- **Minimise your contribution to climate change**
- **Report new populations**
- **More information is needed about this species**